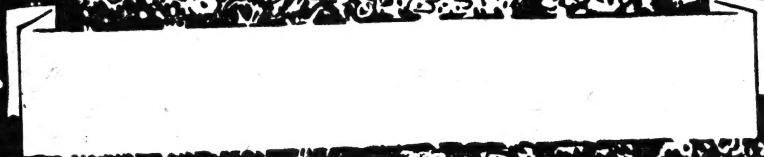


## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



# Hand Book FOR THE GARDEN



# INDEX

Most names of flowers which are raised from seed are not included in this index list. See pages 25, 26, 27, 28, 29 flower listing.

<b>A</b> nnuals.....21, 25-30	Fungicides..... 5	Pepper.....17
Arsenate of lead..... 5	<b>G</b> arden Seed	Perennials.....20, 27
Asparagus..... 6	Production.46, 47, 48	Phlox.....32
Asters.....28	Garlic.....13	Planning Oarden....1, 2
<b>B</b> eans.....7, 8	Gladiolus.....31	Planting..... 2
Beets..... 8	Gloxinia.....27	Planting Tables....44-45
Begonias.....27	Gooseberries.....37	Potato.....17
Blackberries.....37	Grapes.....37	<b>R</b> adish.....17
Bordeaux Mixture.... 6	Gumbo.....15	Raspberries.....37
Borecole.....13	<b>H</b> ellebore..... 6	Rhubarb.....17
Brussels Sprouts..... 9	Herbs.....13	Roses.....35
Bulbs.....33-34	Horse Radish.....13	Rutabaga.....17
<b>C</b> abbage..... 9	Hotbeds.....37	<b>S</b> hrubs.....35
Cannas.....30	Hyacinths.....33	Slug Shot..... 6
Cauliflower..... 9	<b>I</b> nsects..... 4	Soil.....1, 2
Carrots..... 9	Insecticides..... 5	Spinach.....18
Celery.....10	Iris.....32	Spraying..... 5
Celeriac.....10	<b>K</b> ale.....13	Squash.....18
Chives.....10	Kohl Rabi.....14	Strawberries.....36
Coldframes.....39	<b>L</b> eek.....14	Storing Vegetables....
Coleus.....27	Lettuce.....14	.....Inside Back Cover
Corn.....12	Lawns.....41-42	Succession of Crops..2, 20
Cucumber.....12	Lillies.....32	Sweet Corn.....11-12
Cultivation.....1, 3	<b>M</b> aggots..... 5	Sweet Potatoes.....18
Currants.....37	Melon.....15	Sweet Peas.....29
Cutworms..... 4	Moths..... 4	Swiss Chard.....18
Cyclamen.....28	Mushroom.....15	<b>T</b> hinning..... 4
<b>D</b> ahlias.....31	<b>N</b> arcissus.....33-34	Time to plant..... 2
Drainage..... 1	<b>O</b> kra.....15	Tomato.....18
<b>E</b> arliness..... 2	Onion.....15	Transplanting.....3, 23
Egg Plant.....13	<b>P</b> ansy.....28	Tulips.....33-34
Endive.....13	Parsley.....16	Turnip.....20
Everlastings.....27	Paris Green..... 6	<b>V</b> ines.....21
<b>F</b> ertilizer.....1 and 40	Parsnip.....16	Viola.....28
Flowers.....20	Pea.....16	<b>W</b> ild Cucumber.....26
Formaldehyde..... 6	Peony.....32	Window Boxes...22
Fruits.....36		

# Handbook for the Garden

## Cultural Information On Vegetables, Flowers, Bulbs, Shrubs and Fruits

### LOCATION OF THE GARDEN

The farm garden should be placed as near to the house as possible so that it will be but a few steps away from the kitchen. This will save much time in going back and forth to gather vegetables and will enable one to do garden work at odd times. The town garden should be located so that it will get as much sunshine as possible and in a place where the roots of shade trees do not penetrate. Choose, if possible, a level location or if there is a slope, it should be towards the South. A windbreak, such as a hedge, fence or wall on the North and Northwest will increase the earliness of the crops.

### SOIL

The soil for at least a foot in depth should be prepared so that it will be rich, mellow and friable. Leaf mould and rotted stable manure are splendid for plowing under. In the city garden where these are not available, shredded cattle manure or pulverized sheep manure will be found very satisfactory. For early crops it is desirable to use rich, sandy, quick acting soil. This is best also for plants, such as vines and tomatoes, which need much warm weather to mature well. Late root crops—cabbage, etc., do best in slightly heavier soils, which are protected from the drying south winds by sloping to the North or East.

### FERTILIZER

To grow the finest vegetables and flowers, a liberal quantity of plant food is essential. Both manure and commercial fertilizer should be used, the manure to add humus and fertilizer to supply potash, nitrogen and phosphoric acid. On one-quarter acre garden 5 to 8 dumploads of manure are not too much to dig in with one hundred to two hundred pounds of a complete high-grade commercial fertilizer. A tablespoonful of commercial fertilizer stirred in the soil about the roots of each plant two or three times during the season will also be found very effective. If the soil is acid, it will be improved by a liberal application of ground limestone. See page 40.

### DRAINAGE

If the subsoil is gravelly or sandy, no further attention need be given to the matter of drainage. If the sub-soil is stiff clay, it should be under-drained with tile three feet below the surface and not farther than eighteen feet apart, all sloping slightly to an outlet.

### CULTIVATION

The kind of cultivation to be used should determine the plan of the garden. If the work is to be done by horse tools, the arrangement should give the longest possible rows. The garden should be free

from paths across the rows and turning spaces should be provided at the ends. For hand cultivation the garden may be laid off in sections and the rows can be much closer together. In any case, the garden should always be laid out in straight rows. Even when one does all cultivation by hand, a wheel hoe can be pushed through them easily, thus reducing the work.

### **PLAN**

Much loss of time can be avoided by making a definite plan of the garden some time before the planting is to begin. The area devoted to the hotbed, cold frame and seed bed should be decided upon. The location of permanent crops, such as asparagus and rhubarb, small fruits, perennial flowers and shrubs should all be provided for in the plan.

### **SUCCESSION OF CROPS**

Nature provides for more than one crop on the same soil but it is better not to have a second planting of any crop follow the first. Vegetables which reach maturity early in the season should be followed by later kinds. For instance radishes may be followed by cabbage, cauliflower, tomatoes; early carrots by late beans or corn.

### **PREPARATION OF THE SOIL**

Autumn is the time for plowing hard or stiff clay soils, especially in the climate where the frost will break the soil into fine particles during the winter and render it suitable for planting. Sandy loams and soils that contain a large amount of humus may be plowed in the spring. The work should be done early so that the soil may settle before planting. In a small garden the spade may be used instead of the plow, in which case it is important that the soil be turned over to the full depth of the spade and not just a few inches on the surface.

### **TIME OF PLANTING**

Because of our large country and its several climatic zones, we list planting time for northern states only. It is quite an accepted rule to plant 10 days earlier for each 100 miles south of Minnesota.

When heavy frosts are over, plant early peas, onion sets and seed, kale, lettuce and spinach.

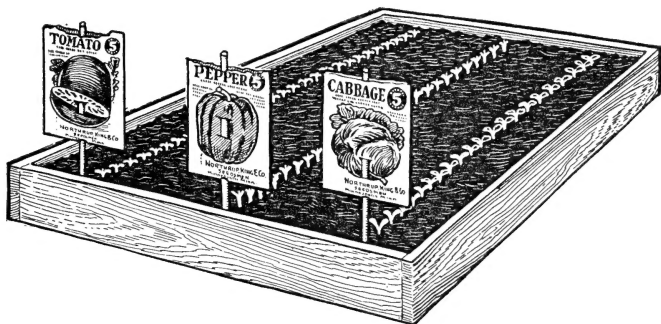
When frosts are about over plant radishes, parsnips, carrots, beets, late peas and early sweet corn, and set out cabbage, and cauliflower plants. An old and useful rule is to "plant corn when the oak leaves are the size of a squirrel's ear."

When all frosts are over and apple trees are in bud, plant string beans and late sweet corn, and set out early tomato plants from the indoor boxes.

When apple trees blossom plant cucumbers, melons, squashes, lima beans and set out the rest of the plants.

Trees, shrubs, vines and dormant roses should be set out as early as conditions will permit, before the leaf buds open. Plant strawberry plants as soon as danger from severe frosts is past and Peonies, Iris, Phlox and other perennials should be planted under the same conditions. Gladiolus bulbs and Dahlias should not be planted until the soil is quite warm.

Tulips, Hyacinths, Narcissus and other spring blooming bulbs must be planted in the autumn.



### EARLINESS

All plants may be advanced by sowing the seed in boxes or pots indoors, page 22, or in a hotbed or cold frame, pages 37-39. The germination of seeds may be hastened by soaking them over night in warm water.

### PLANTING

If the soil is dry and mellow, firm the soil over the seeds and about the plants. This is very important for it brings the soil particles into contact with the seeds and roots and prevents them from drying out. The best way to do this in gardens is with the feet. Tread every inch of the row, after which the surface soil may be leveled and earth mulch formed with a short-tooth rake. When any kinds of plants are set out, whether vegetables, flowers, shrubs or trees, firm the soil over the roots by firm treading and work in well around the crown.

### TRANSPLANTING

Before plants are removed, they should be thoroughly soaked in water and wherever possible, it is desirable to take up some soil with the plant. It is also a good plan to trim off one-third to one-half of the tops, especially in the case of plants like Cabbage and Celery to prevent more evaporation taking place from the leaves than the roots can stand. After transplanting trees or shrubs, it is well to use straw or some other mulch around the roots, which will help keep them moist.

### CULTIVATION

Frequent shallow cultivation should be employed for garden crops. In very dry weather the depth should not exceed two inches. A dust mulch of finely divided soil on the surface will prevent the escape of moisture from below. A crust forming over the soil after a rain is harmful to plant growth and should be broken up as soon as the land can be worked. Too much importance can not be placed upon the thorough cultivation of a garden and if the work is properly and thoroughly done, there will be little difficulty in controlling weeds.

### THINNING

Failure to thin out plants which are crowding each other is very frequently a cause of failure both with flowers and vegetables. This work should be done as soon as the plants are large enough to pull, before they become spindling. When thinning plants in the bed, it should be the aim to remove the centers of the thick bunches, leaving the spaces as uniform as possible.

### INSECTS

In the Autumn after the crops have been harvested or as soon as any crop is disposed of, any refuse that remains should be gathered and placed in a compost heap or burned if diseased or infested with insects. Dead vines or leaves of plants are frequently covered with spores of diseases and they should also be burned.

### MOTHS

Cabbage, Tomato, Pepper, Cauliflower and other similar plants may be protected from all kinds of insect pests that do not come from the ground by this simple method: Nail 18-inch pieces of lath around four stakes 20 inches long, about 6 inches above the sharpened ends. Drive the stakes into the ground around the plants till the lath rests firmly on the soil all the way around. Spread mosquito netting around and over the stakes. The lath will hold it to the ground and no bugs or worms can get to the plant. This interferes a little with cultivation, but it is so simple an arrangement that in the average home garden it can be removed for cultivation and replaced. Be sure to remove the netting when blossoms come, for unless you allow friendly insects to pollenate there will be no fruit.

### CUTWORMS

The worst enemy of the small garden is the cutworm. The best way to get rid of him is to prevent his coming. The moth of the cutworm lays eggs in broad-leaved plants and other rubbish in the Fall. Clean the garden thoroughly in the Fall. Make a "fence" around the garden of six-inch boards held in place by stakes; this keeps out marauders from neighboring sod. If you have been unable to take these precautions, plant vegetables in hills rather than in rows, as far as possible. Around each hill drive shingles sawed in two, four to five inches from the plant. When you set out the plants, surround them with shingles also. Shingles are better than paper collars. Inspect your garden thoroughly every morning. When you find a ruined plant, dig with a sharpened stick and kill the cutworm that lies concealed at its roots.

A bran mash sweetened with molasses and poisoned with paris green is a good remedy. Mix one-half pound paris green with 10 pounds bran and then add one quart cheap molasses. A little water may be added to stiffen the mash if needed. Place about a tablespoonful of this mash within 8-10 inches of the plants subject to attack in the evening. If placed closer, rain may wash the paris green against the roots and injure the plants. Chopped up clover poisoned with paris green will serve almost as well.



### MAGGOTS

The cabbage and onion maggots are the only ones that need be considered in this locality. They are hatched from the eggs deposited by the adult flies, in the late Spring or early Summer, at the base of the young plants or in the soil just below the surface, near the plants. They attack Cabbage, Cauliflower, Kohl Rabi, Radish and Onion plants. If the beds containing these plants are small it is well to build a fence of 8-10 inch boards around them and cover this with mosquito netting. This will prevent the entrance of the flies and hence the maggots.

To combat the adult flies of the Cabbage maggots the following remedy has been found effective by the Minnesota Experiment Station: Three ounces lead arsenate, two and one-half pounds brown sugar, four gallons water.

Make a paste of the lead arsenate, add the water and in this mixture dissolve the sugar. Apply with a spray, sprinkling can or whisk broom every week for five or six weeks in fair weather, or twice as often in rainy weather. The liquid attracts and poisons the flies.

To combat the flies of the Onion maggot use one-fifth ounce sodium arsenate, one-half pint New Orleans molasses, one gallon water. Apply same as for cabbage maggot.

To combat the maggots the following remedy can be used: Steep two ounces white hellebore in one quart water for one hour, then dilute to one gallon. Use about a cupful for each pint and apply every five days for the first two weeks and every week for the next four or six weeks. An ordinary sprinkling can with the sprinkler attachment removed can be used.

### SPRAYING

There are three kinds of sprays: First, poison insecticides; second, contact insecticides; third, fungicides.

Poison insecticides are used to combat leaf-eating or biting insects, such as the Potato bug, Cabbage worm, etc., which cause injury to the plants by eating the leaves. The spray when properly applied covers the leaves with a coating of poison. When these poisoned leaves are eaten the insect is killed.

Contact insecticides are used to combat sucking insects, such as plant lice or aphids and scale insects which do not eat the leaves but cause the plant injury by penetrating the surface with their beaks and sucking the juices from the leaves. A spray that kills the insect by coming into contact with its body must therefore be used.

Fungicides are used to combat or prevent fungous plant diseases.

Following will be found a list of the sprays in common use and the methods of preparing them. The quantity desired can be made by using more or less of the ingredients in the proportions herein stated.

### POISON INSECTICIDES

One—Arsenate of lead. Does not injure foliage or wash off. Three pounds commercial paste or one and one-half pounds powder to 50 gallons water.

Two—Paris green. One pound to 25 or 50 gallons water; two or three pounds of stone lime may also be added to this. Make a paste first then add the water.

Three—Hellebore. Used dry or one ounce to two gallons water.

Four—Slug shot. This is a powder which is sold ready for use. It is effective for leaf eating insects, especially Cabbage worms.

### CONTACT INSECTICIDES

One—Kerosene emulsion. Dissolve one-half pound hard laundry soap in one gallon boiling water, then add two gallons kerosene, churning constantly until a creamy emulsion is obtained. Dilute one part of this emulsion with 10 or 12 parts of water for spraying.

Two—Commercial Tobacco Extracts. These are splendid for all kinds of aphids or plant lice. Especially recommended for use on Sweet Peas, Roses and other tender plants.

"Black Leaf 40" and Nico—Fume Liquid are concentrated solutions of nicotine. They are to be diluted with water according to the directions on the can.

### FUNGICIDES

One—Bordeaux Mixture. This may be procured in liquid form and only needs diluting with water to be ready for use. One gallon makes 50 gallons of spray. This is valuable to prevent Potato blight, Bean anthracnose or rust, Cucumber mildew, etc.

Two—Formaldehyde. 40 per cent pure, 1 pint; water, 30 gallons; used as a dip to treat Potatoes for scab. Formalin, 1 pint; water, 45 to 50 gallons; used 1 gallon to the bushel in treating seed Oats for smut.

## Directions for Raising Garden Vegetables

Where dates for planting or harvesting are mentioned, reference is made to localities in the same latitude as Minneapolis. For localities south of Minneapolis, it has been found practical to plant 10 days earlier for each 100 miles.

### ASPARAGUS

Sow one ounce for fifty feet of drill early in the Spring. Scatter the seed an inch apart in drills two to three feet apart, covering with one inch of soil. After plants are up, thin to two inches apart. Such seedlings, if kept cultivated, free from weeds and not allowed to suffer lack of water during Summer and Autumn, will be fit to plant out in permanent beds the following Spring and should commence bearing in about three years. It is usually more satisfactory to purchase strong roots from a seedsman. 100 to 200 plants will be found sufficient to supply the ordinary family. These can be set out any time during early Spring. For the home garden, beds should be formed five feet wide with three rows planted in each, one in the middle and one on each side a foot from the edge. Plants in rows should be a foot apart. In planting, a cut is made a little slanting to the depth of six or eight inches. Plants are then laid against the side of the trench, care being taken to spread out the rows well, setting the crown of the plant about three inches below the surface.



**Pole Beans, fine for mid-summer use. Valuable because of their productiveness and ease of culture.**

Cultivate thoroughly all Summer to keep out the weeds. The deeper the soil and greater abundance of well rotted manure that is used, the greater will be the crop, for Asparagus is a strong feeder. No shoots should be removed the first year the plants are set in the permanent bed and the period of cutting should be short the second year. After the second year the plants become well established and with proper fertilizing and care, the bed will last indefinitely.

### GARDEN BEANS

Beans thrive best in a rather warm, sandy loam, but may be grown on almost any kind of soil. Beans may be planted about May 5th and every two weeks until July 5th. The seed germinates in five to ten days. Plant at the rate of 2 lbs., or one quart to one hundred feet of drill or one bushel to the acre in drills; twenty hills per consumer. Plant two inches deep in drills eighteen inches to two feet apart, according to the richness of the soil. The seed should be dropped about two inches apart and after the plants are in the third leaf, thin out to stand four to six inches apart in the row. Cultivate frequently before blossoming, but do not touch the leaves when they are wet. They should be ready in about seven weeks after planting.

Snap Beans are best for table use before they reach full size and maturity.

### FIELD BEANS

Early plowing, at least five weeks before planting time, is necessary for good results with Beans. After this the land should be cultivated frequently to bring it into the best possible condition.

Beans thrive on most all soils but better results are gained by the liberal use of fertilizer or planting in light, rich, well drained loam. Beans are extremely sensitive to frost and moisture. It is useless to plant them before all danger of frost is past and the ground is warm. Sow the seed in drills 30 inches apart and four to eight inches apart in the row. They should be frequently cultivated up to the time of blossoming, but this should never be done when the ground or plants are wet with rain or dew, as it will be sure to injure them. If disturbed while in bloom, it will prevent their setting well.

Plant 30 to 35 lbs. per acre, with grain drill.

### BEETS

The best soil for Beets is a rich, sandy loam, preferable one which has been thoroughly enriched the year before with well rotted manure. Sow one ounce to fifty feet of drill; five pounds to the acre in drills; fifteen feet per consumer. In the latitude of Minnesota plant May 1st and every four weeks until July 15th, in rows one and a half feet apart, one inch apart in the row and one to two inches deep. When eight to ten inches high, thin to four inches apart. Cultivate thoroughly from the time the plants come up until they shade the ground. Beets should be dug before they reach full size if the best quality for table use is desired.

Late sown Beets are better than the early for storage, for they are more tender and a better quality for Winter use.

### BRUSSELS SPROUTS

One ounce should produce about two thousand plants. This crop is very similar to Cabbage and may be grown in the same manner. As the heads begin to crowd on the stem, the leaves should be broken from the plant to give them more room. Pick the heads after frost. For winter use, take up the plants that are well laden with heads and set them close together in a pit or cellar with a little soil around the roots.

### CABBAGE

One ounce will produce about two thousand plants. One-half pound should make enough plants for an acre. Set out ten plants per consumer. Cabbage does best in a rich prairie loam, moist yet well drained and in fine condition. In the latitude of Minnesota early varieties should be sown in hotbeds in February or March and should be transplanted about the last week in April. They are the best for table use when three-fourths headed. For second early, the early kinds may be sown the first week in April and planted out in May for a crop in late July and August. Late Cabbage for Fall and Winter use may be sown from May to June, transplanting them before the first of July. Plants should be lifted with some soil on roots.

Have rows 3 feet apart and plant 20 inches apart in row. Set with a trowel so that plants slope a trifle towards the North. Plant at least 8,000 plants to the acre. If planted too far apart Cabbage grows too large for the commercial market.

Start using a fine tooth cultivator immediately after plants start to grow. Keep it up every 4 or 6 days until the Cabbages are large.

A large sharp knife or hatchet may be used for harvesting.

Gather October 1st for Winter storage. Do not remove the leaves or soil. Stand the plants upright in cold cellar with roots in the sand. Cabbage is very hardy and is not injured by slight freezing.

### CAULIFLOWER

This may be grown in practically the same way as Cabbage. The plants, however, are not so hardy, not resisting cold. One ounce will produce about two thousand plants. When the heads begin to develop, tie the leaves over them to keep out the light and keep the heads white.

### CARROTS

Carrots do best in a sandy, fine, mellow loam, manured the year before. Like other root crops, they require a soil in very good physical condition as the roots can not develop properly in hard ground. Use one ounce of seed for one hundred feet of drill; four pounds per acre; ten feet per consumer. Plant May 1st and every two weeks until July 1st in rows one and one half feet apart, one inch apart in the row and half an inch deep. Press the earth firmly over the seeds, which should germinate in twelve to eighteen days. When in the third leaf, thin three to four inches apart and cultivate occasionally until maturity. For Winter storage dig the last crop October 1st. Cut off the tops and bury the roots in dry sand in the cellar.

### **CELERY**

Celery requires deep, rich moist soil, the nearer mud the better. Plenty of well rotted barnyard manure or other fertilizer should be used on the soil before planting. Sow one ounce per two thousand plants; one pound to transplant for one acre; fifty plants per consumer. In this climate the seed should be sown in hotbeds in early April and transplanted about June 1st. Seed should be merely pressed into the soil. Set out in furrows three feet apart, six inches deep, eight inches wide, eight inches apart in the furrow. Trim the roots to three inches, setting the plants in the earth up to the first leaf. If the weather is dry at time of planting, be careful to have the roots properly firmed, which may easily be done by pressing the side of each plant gently with the foot. Keep plants weeded until about August 10th. when the earth should be drawn around the plant nearly to the tips of the leaves, being careful not to let soil get into the heart. Keep drawing earth around the plants until they are gathered. The soil should be firmed around each plant by the hand, so as to keep the leaves in an upright position and prevent them from spreading.

Celery can also be blanched with boards, by setting them on edge on either side of the rows and close to the plants, so that the boards are only two or three inches apart and may be held together by wire hooks or cleats nailed across. Banking Celery should always be done when the soil is not too moist as otherwise the plants are likely to mildew. To store Celery for the Winter, gather October 1st. Bury the roots in dry sand in a cool cellar.

### **CELERY CABBAGE, CHINESE CABBAGE OR PE TSAI**

**Pe Tsai.** Improved Chinese Cabbage. It is very easily grown and does well in nearly all parts of the country. It should be grown like a late Cabbage, planting in July, as early plantings run quickly to seed. The seed is sown in drills 16 to 20 inches apart, one-half inch deep, and the seedlings trimmed two or three times. The full grown plant somewhat resembles a Cos Lettuce in appearance. It has a mild flavor and may be eaten raw or cooked. Boiled and seasoned with butter, it is especially delectable.

### **CELERIAO**

This requires about the same culture as Celery, except that it does not need earthing up or blanching.

### **CHIVES**

Sow in any good garden soil in rows a foot or more apart and plant a foot apart in the row. The roots rapidly form clumps so that if they are grown in a quantity they should be planted in solid rows. Sow seed one-half inch deep or set out the roots in April. Thin seedlings to six inches in the row. Cut the leaves (after the plants become established) as desired. Chives are hardy and require only a light mulch for winter protection. Reset the roots by taking up and dividing every four years.



Northrup, King & Co. are extensive growers of sweet corn seed—all varieties. Their Extra Early Golden Bantam has won national recognition and popularity.

### CORN, SWEET

Corn does best in a warm, light loam, manured the year before. Plant one quart or 2 pounds for two hundred hills; 10 to 15 pounds in hills per acre; twenty hills per consumer. Nothing is gained by too early planting as the wet, cold weather of early Spring and the frosts are apt to destroy the young plants. It is desirable, however, to make one or two plantings reasonably early, so as to harvest the crop as soon as possible. Usually May 5th and every two weeks until July 15th is about right. Or it may be started indoors in April in boxes and transplanted to the open ground in May. Plant in hills two and a half feet apart each way; two inches deep; six seeds per hill, dropping the seed so there is an inch or two between them in the hill. When six inches high, thin to three plants per hill. Keep the suckers down by breaking them off. Cultivation should be shallow.

## Special Seed Corn Varieties

Northrup, King & Co. have been growing Sweet Corn for nearly a half century. During the last several years they have developed two new Golden Bantam varieties—one named "KINGSCROST," the other GOLDEN BANTAM EXTRA EARLY.

"KINGSCROST" is a double cross, which is especially valuable to market gardeners, as it is 8 to 10 days earlier than the Standard Bantam, the ears are very uniform in size, color and texture, and they ripen very evenly. It has frequently happened that ears from one planting have ripened so evenly they could all be picked at once.

**EXTRA EARLY GOLDEN BANTAM.** This is a recombination of 15 inbred strains, producing 8 row ears, 5 to 7 days earlier than the Standard Golden Bantam, and more uniform in ripening as well as in size.

If yellow or golden ears are wanted, plant Extra Early Golden Bantam for early and Bantam Evergreen for late crop. If white ears are desired, plant Early Cory for first crop and either Stowell's Evergreen or Country Gentleman for late crop.

To have the finest Sweet Corn it must be picked in just the right condition, that is, when the skin of the grain breaks at the slightest puncture. It will be of inferior quality if it is either a few days too old or too young.

### CUCUMBER

Cucumbers do best in warm, rich, sandy loam, mixed with a shovelful of well rotted manure per hill. Use one ounce of seed for sixty hills; two to three pounds in hills per acre; two hills per consumer. Plant about May 15th in hills five feet apart each way, three inches apart in the hill, one to two inches deep; eight seeds per hill. When in the third leaf, thin to four plants per hill. Train the vines in different directions on the ground, removing the fruit when it matures to maintain the productiveness of the vines. As Cucumbers are subject to several diseases, the old vines and fruit should all be destroyed. The crop should not be planted two years



in succession on the same land. While young, the Cucumber plants are frequently destroyed by a small beetle that attacks the lower part of the stem. To protect a few hills when being grown for family use, the beetles may be kept off by covering the plants with small frames over which fly screen or mosquito netting is stretched. Cucumbers should be gathered for the table before the color turns.

### EGG PLANT

Egg Plant does best in a fine, rich, sandy loam, well drained. Fresh manure must be avoided. Sow one ounce of seed per thousand plants; three plants per consumer. This crop can be handled about like the Tomato, but it is even more important to keep the young plants developing rapidly, never letting them become checked. They should be started in hotbeds or the house in March or April and transplanted to the open ground about June 1st, set out in rows two or three feet apart, two and a half feet apart in the row. Cultivate freely until the first fruit is ready. Remove the lateral branches, so as to produce fewer fruits per plant.

### ENDIVE

Sow early in the Spring at the rate of one ounce for 100 feet of drill. Sowings can be made at intervals in June and July and transplanted one foot each way when of sufficient size. After the plant has attained full size, it should be blanched by gathering up the leaves and tying them by their tips in a conical form. They will then be ready to use in three to six weeks.

### KALE OR BORECOLE

Soil as for Cabbage, moist and well enriched. Sow one ounce for 150 feet of drill early in June and transplant to rows, the plants in the row 18 to 20 inches apart, according to variety. Pick the leaves as wanted or pull the whole plant. The leaves are best after a frost.

### GARLIC

This is raised from the bulbs which are similar to Onion Sets. They should be separated and planted in drills eight inches apart, four to six inches apart in the drill, covering two inches deep. Cultivate same as for Onions, very cleanly. When the leaves turn yellow, pull up the bulbs and dry in the shade.

### HERBS

In general, these should be planted on good, light earth and kept well cultivated. Most kinds should be sown about one inch deep, as soon as the weather becomes settled. Later thin to 6 inches apart in the row, the rows 12 to 18 inches apart. They should be gathered when dry, dried in the house in a warm (not hot) room and are best stored in air-tight receptacles.

### HORSE RADISH

The roots should be planted each Spring and dug in the Fall. The soil should be a medium loam, deep and moderately rich. The

sub-soil should be open so as to allow the roots to penetrate. Otherwise, the main root will branch. Set the root cuttings 12 to 18 inches apart in the row and the rows 2 feet or more apart. It is usual to plant the cuttings 3 to 6 inches deep in a slanting position, the larger ends all pointing up. They should be cultivated frequently.

### KOHL RABI

This belongs to the same class as Cabbage and Cauliflower. It is perhaps half way between the Cabbage and Turnip in that its edible part consists of a swollen stem of the plant. This thrives in a light, rich loam, manured the year before. Sow one-fourth ounce of seed per one hundred feet of row; two pounds of seed per acre; five feet per consumer. Sow May 1st and every two weeks to July 1st, in rows one and a half feet apart, one-half inch apart in the row, one-half inch deep. When in the third leaf, thin to six inches apart, cultivating enough to keep the weeds down. They should be used as soon as they are fully grown while they are still young and tender and before the skin hardens.

### LEEK

This plant belongs to the same class as does the Onion. It requires somewhat different treatment. Leeks can be grown on any good garden soil. Sow one ounce of seed per one hundred feet of drill; four pounds per acre. Sow very early in the Spring in drills one inch deep and eighteen inches apart. When six inches high, transplant four to six inches apart in the rows, setting the plants in the ground up to their center leaves and as they grow, draw the soil up around them. This process tends to bleach the Leek and improve the quality. The ground can hardly be made too rich, for the Leek is a gross feeder.

### LETTUCE

**Leaf Lettuce** does best in a rich loam soil containing plenty of humus. Use three-fourths ounce of seed per one hundred feet of row; four pounds per acre; ten feet per consumer. To produce early crops plants may be started indoors or in hotbed and transplanted to open ground when danger from heavy frosts is over. Seed may be sown out doors when danger of severe frosts is over. Repeated sowings every two weeks insure a steady supply of this popular salad vegetable. Sow seed thinly, one-half inch deep in rows eighteen inches apart. Thin plants to six inches as soon as they begin to crowd. Because this vegetable depends largely upon quick growth for its best qualities, the soil should be rich and well cultivated.

**Head Lettuce** gives best results on rich soil and responds to thorough cultivation. In arid sections watering should be frequent, so that the crop will not be stunted. Plants may be started indoors as in the case of Leaf Lettuce. When transplanted should be to rows twenty inches apart and at twelve to fifteen inches apart in the row. May be seeded to open ground when danger from heavy freezes is over in 20 inch rows, using about three pounds of seed per acre. Thin to twelve or more inches when second pair of leaves are the size of an oak leaf. All varieties head best in cool weather.

### MELON, MUSK

Musk Melon prefers a moderately rich, light, warm soil. It requires a long season to develop and is easily injured by frost or even by cool weather. Sow one ounce of seed to thirty hills; four to five pounds in hills per acre; three hills per consumer. Plant May 15th in hills five feet apart each way, three inches apart in hills, one inch deep, eight seeds per hill. Before planting, mix well with the soil in each hill a couple shovelfuls of thoroughly rotted manure. When in the third leaf, thin to four plants per hill. Train the vines in different directions and cultivate until the vines prevent. On moist soil it is sometimes necessary to use shingles or some other method of holding the Melons up off the ground to prevent them from rotting. For an early crop, Melons may be started in hotbeds in berry boxes, transplanting after the soil becomes warm.

**Cassaba and Honey Dew Melons.** Sow the seed in the northern states in pots or cold frames after April 15th, so that established plants may be ready for setting in the open ground June 10th to 20th.

### MELON, WATER

The cultivation of Water Melon is practically the same as for the Musk Melon, except that the plants grow larger and require more room for developing than those of the Musk Melon and prefer sandier soil. Sow one ounce for thirty hills; four to five pounds in hills for an acre. Plant Water Melon ten feet apart each way between the hills. Protect the young seedlings from the Cucumber beetle the same way as suggested for Cucumbers.

### MUSHROOM

These require special treatment. A leaflet describing cultural methods will be mailed free upon application.

### ONION

This crop does best on old land, very fertile, free from weeds, fall plowed and thoroughly fertilized. Sow one ounce of seed per one hundred feet of row; five to six pounds per acre; twenty-five feet per consumer. Sow the seed about April 25th, about one-half inch deep in rows one and a half feet apart, one-half inch apart in the row. Thin out to two inches apart in the row when plants are large enough. Remove the weeds in row by hand. Cultivate and hand weed the crop every two weeks throughout the Summer. If the land is likely to be weedy, it is well to sow some radish with the Onion seed to mark the row.

Onion Sets may be used instead of seed and will produce earlier crops of green Onions or large bulbs. Place the sets three to four inches apart, according to size; three inches deep, in rows one foot apart. It is customary to furrow out the soil with a small hand plow early in the Spring. Set the onion in this furrow right side up and cover with a garden rake. If the soil is dry, it should be well firmed over the sets. 380 to 400 pounds of sets are required per acre.

### OKRA OR GUMBO

This is a hot weather and very tender plant grown for its seed

Pods which are picked while tender or canned for winter use. It is best to start it under glass or indoors in pots because it is difficult to transplant. The pods should be picked before they develop woody fibres. One ounce of seed contains about four hundred seeds. The seeds should be sown in light, rich soil about one inch deep and the plants should be transplanted 2 feet apart in the row and rows 3 feet apart. The pods should be picked at an immature stage, when they are two or three inches long.

### **PARSLEY**

Parsley does best in a rich, mellow loam. Use one ounce of seed per one hundred fifty feet of row; six pounds per acre; two feet per consumer. The seed germinates very slowly, so it is best to soak it in warm water over night before planting. Radishes may be sown with the Parsley to mark the rows. Great care should be taken in sowing Parsley seed not to sow too deeply. Plant thinly one and a half inch deep in rows, pressing down the earth firmly over the seeds. When in the third leaf, thin to four inches apart. For winter use, transplant to the cold frame or window box.

### **PARSNIP**

This requires a rich loam thoroughly pulverized and deeply worked. Use one ounce of seed for two hundred feet of drill; five to six pounds per acre; five feet per consumer. Sow May 1st in rows one and a half feet apart, one inch apart in the row, three-fourths inch deep. Press the earth firmly over the seeds. When three inches high, thin to three inches apart, keeping the soil loose throughout the season. Dig after a killing frost. Cut off the tops and bury the roots in dry sand. Frost improves the flavor.

### **PEA**

This is one of the easiest grown and best garden vegetables. There are two most important classes, the Early Smooth Seeded and the wrinkled varieties. The Smooth Round Seeded varieties are most largely grown by gardeners for the early market as they ripen very uniformly. The Early Wrinkled varieties are nearly as early as the Round Seeded Extra Early, but do not mature so uniformly. This makes them better for family use. They are much sweeter than the Round Seeded sorts. The Main Crop varieties generally grow taller and come into bearing when other sorts are gone. They usually remain fit for table use a long time and are generally sweeter than the early sorts. All Peas are best for table use when gathered as soon as the pods are filled.

Peas do best in a rich loam soil, free from weeds. They will come earlier in a light, rich soil. For a general crop, a rich loam or clay soil is best. Use two pounds of seed per one hundred feet of row, one hundred fifteen to one hundred forty pounds of seed required per acre in drills, or one hundred seventy-five pounds if broadcast; twenty feet of double row per consumer. Plant April 25th and every two weeks until July 1st. It is often convenient to use double rows six inches apart, three feet apart between each pair of rows. The seeds may be sown two or three inches apart in the

row, two inches deep. If they are soaked in water the night before planting, it will hasten germination. The Dwarf varieties will not need to be trained. The Tall varieties should be trained on poultry netting or brush. Peas can be planted about July 20th for a fall crop.

### PEPPER

Peppers require warm, mellow soil and do best in a sheltered situation. One ounce of seed will produce about two thousand plants. The Peppers require about the same treatment as the Tomatoes do and should be started under glass. To get larger fruit, it is well to pinch off all blossoms after the first few fruits have set, and cut back the ends. Cut the fruit with an inch of stem and do not tear it from the plant.

### POTATO

This crop does best in a rich, sandy loam, well drained, containing plenty of organic matter. It requires about ten to twelve bushels Potatoes per acre. Either whole or cut Potatoes may be used for seed. A medium sized one may be cut into five or six pieces, allowing several eyes to each piece. Plant April 15th to June 20th, according to season and whether early or late varieties are used. The rows may be two to three feet apart, one to two feet apart in the rows or they may be in hills two to three feet apart each way; three to five inches deep. Cultivate freely, seeing that the dirt is well up around the stems and spray often enough to prevent damage by insects or disease.

### RADISH

Radishes do best in light, quick soil. If they grow slowly they will have a pungent flavor which will not be satisfactory for table use. Sow one ounce for one hundred feet of drill; nine to ten pounds in drills per acre; ten feet per consumer. Sow April 25th and every two weeks until July 1st. For a Fall crop, sow about September 15th. Plant in rows one and a half feet apart, one inch apart in the row, one-half inch deep. When in the third leaf, thin to three inches apart. If plaster is mixed in with the soil at the time of sowing the seed, the Radishes may turn out brighter in color and of better quality. Winter Radishes may be sown in early June and cultivated like Turnips.

### RHUBARB

Sow the seed in cold frame in the Spring and as soon as the plants are large enough transplant into rows 1 foot apart each way and cultivate. The following Spring, plant out in rows 5 feet apart each way and each Spring work into the soil a liberal supply of decomposed stable manure. Rhubarb roots are set out and cultivated as the above and this method gives edible Rhubarb in a very short time.

One oz. of seed will sow 75 ft. of row.

### RUTABAGA

The culture of this is the same as for the Turnip, except that it requires more room and a longer period for its growth. They may be sown from about June 20th to August 1st.

### SPINACH

Spinach does best in a cool climate and therefore it is not best to try to raise it in the Summer months. It may be planted in the Fall, protected over Winter by three inches of straw, but usually in this section it is planted among the first Spring crops. Spinach does best in a rich, sandy loam. Sow one ounce for one hundred feet of row; ten to twelve pounds in drills per acre; five feet per consumer. Plant about April 25th and every two weeks for a succession. Sow in rows one and a half feet apart, one inch apart in the row, one and a half inch deep, pressing the soil firmly over the seeds. When three inches high, thin to six inches apart. Spinach should always be gathered before the flower spike appears.

### SQUASH

There are two types of Squash, the Bush varieties and the Running varieties. They require practically the same soil and cultural methods as the Musk Melon. Sow one ounce for fifty hills; three to four pounds in hills per acre; two hills per consumer. Squashes do best in a rich, sandy loam, manuring the hills as suggested for Melons. Plant about May 10th in hills seven and one-half feet apart each way, three inches apart in the hill, one inch deep, eight seeds per hill. When in the third leaf, thin to four plants per hill. Train the vines in different directions. Cover every fourth joint with earth so they will form roots which will help feed the fruit. The Bush varieties may be planted in hills three to four feet apart. The Squash plants may be protected from the Cucumber beetle by the same method as outlined for the Cucumber. Summer Squashes should be gathered before the shell hardens.

### SWEET POTATOES

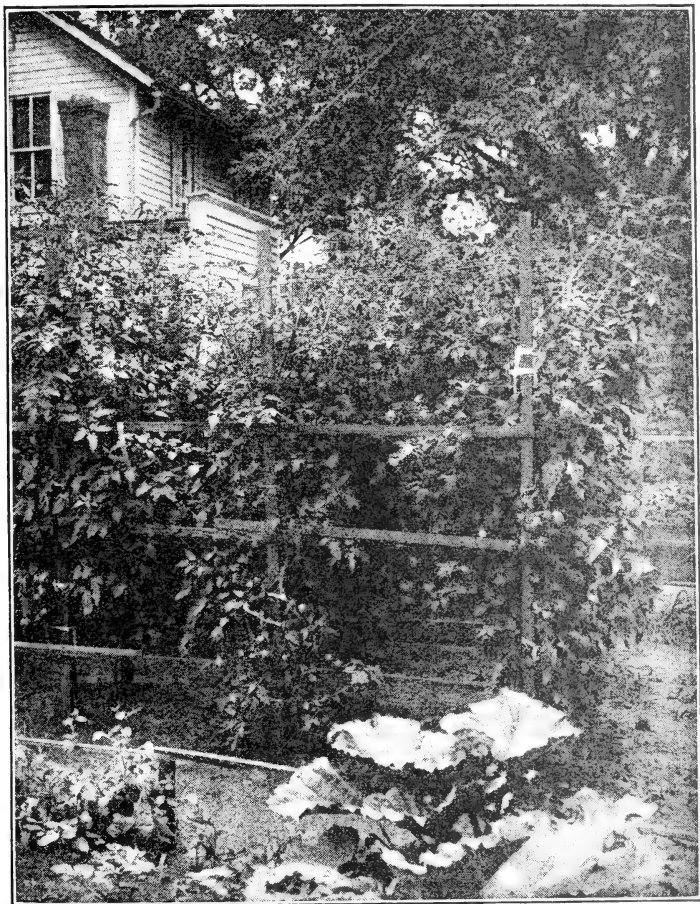
These are usually grown from sprouts which are set in rich, loose soil after the weather becomes settled, the end of May or first of June. They should be put in about 18 inches to 2 feet apart, placing the sprouts deeper in the soil than they were in the propagating bed. Cultivate regularly until the vines cover the ground and allow the vines to root. Dig as soon as the vines are touched with a light frost and store in sand.

### SWISS CHARD

This belongs to the Beet family and requires about the same treatment. Sow at the rate of one ounce to 50 feet of drill. 5 feet per consumer. Drills 16 to 18 inches apart and thin the plants to stand 10 to 15 inches apart in the row. Cultivate occasionally and water as often as necessary. The leaves may be gathered during the Summer and Fall and new ones will quickly grow again.

### TOMATO

The different varieties of Tomato can all be grown about the same way, including the large fruited sorts, the Husk Tomato or Ground Cherry and the other small fruited kinds. Sow one ounce of seed for fifteen hundred plants; one-fourth pound transplant per acre; five plants per consumer. Tomatoes do best in a sandy, well



**Tomatoes bear best when trained up on stakes or trellises.**

pulverized loam. The seed should be sown in March or April in a hotbed or indoors in drills five inches apart and one-half inch deep. When the plants are about two inches high, they may be set out three inches apart in boxes three inches deep or potted into three-inch pots, allowing one plant per pot. They should be transplanted into the garden about May 15th in rows three feet apart, three feet apart in the row. Cultivate freely until the plants shade the ground. Remove all but the two strongest branches. Tie to stakes or some other support. Gather the fruit as it ripens.

### TURNIP

The varieties of Turnip and Rutabaga vary much in form, size and color. They are essentially cold weather plants and do best when most of the growth is made in Autumn or early Spring. Like the Radish, they should be grown rapidly. Turnips do best on a light loam manured the year before. Use one ounce to one hundred fifty feet of row; one to two pounds per acre in drills; fifteen feet per consumer. Sow about April 25th and August 15th in rows one and one-half feet apart, one-half inch apart in the row, one-half inch deep. When in the third leaf, thin to six inches apart.

## The Flower Garden

Almost everybody wants a flower garden. It is easily grown, takes little space and gives untold pleasure in the cut flowers it furnishes for the house and the array of color it gives the space it occupies.

Flowers themselves may be planted on the edge of the shrubbery masses. Here they are made more a part of the picture and they always show up better against a background of foliage.

### FLOWERS FOR SUCCESSION

The best way to have a continual supply of flowers through the season is by selecting varieties that will be ready at different times; some early, some at mid-season and others late. Following are some of the leading varieties, which can be raised from seed:

For early flowers—Bachelor Buttons, Sweet Alyssum, Sweet William, Verbena, Larkspur, and Poppies are always popular.

Midseason sorts—Nasturtiums, Marigolds, Petunias, Pinks, Snapdragons, Pansies, Mignonette, Sweet Peas and Calliopsis.

Late varieties—Asters, Zinnias, Salvia, Balsam and Cosmos make a good display for flower beds or cutting.

Cosmos is one of the most useful tall annuals for the garden as this can be safely transplanted any time during the summer, if care is used in taking up some soil with the roots. It is especially valuable for filling in at the backs of beds after other plants are through blooming.



**FRAGRANT FLOWERS FOR CUTTING**

Those marked P. are Perennials.

Ageratum	Lavender, P.	Sweet Pea
Alyssum	Matthiola	Sweet Rocket, P.
Asperula, P.	Mignonette	Sweet Sultan
Ambrosia	Mimulus Moschatus	Sweet William, P.
Candytuft	Nicotiana Affinis	Verbena, Blue
Carnations	Petunia	Verbena, Pink
Dianthus	Pinks, P.	Violet, P.
Heliotrope	Scabiosa	Waldmeister
Hesperis, P.	Stock	Wallflower, P.

**MOST USEFUL ANNUALS FOR CUT FLOWERS**

Alyssum, Sweet	Cosmos	Poppy
Aster	Everlastings	Physalis F. or Japan- ese Winter Cherry. (everlasting)
Bachelor Button	Gaillardia	Scabiosa
Blue Bonnet	Gypsophila	Snapdragon
Blue Lace Flower	Helichrysum (everlasting)	Stocks
Calendula	Larkspur	Sun Flower
Carnation Marguerite	Marigold	Sweet Peas
Calliopsis	Mignonette	Sweet Sultan
Candytuft	Nasturtium	Verbena
Chrysanthemum	Painted Tongue	Zinnia
Clarkia	Pansy	
Coreopsis	Phlox Drummondii	

**VINES RAISED FROM SEED**

Balloon Vine	Dolichos or Hyacinth	Nasturtiums
Canary Bird Vine	Bean	Scarlet Runner Beans
Cardinal Climber	Gourds	Sweet Peas
Cobaea Scandens	Japanese Hop	Thunbergia or Black Eyed Susan
Cypress Vine	Morning Glory	Wild Cucumber
	Moon Vine	

**ANNUALS FOR BEDDING PURPOSES**

African Daisy	Daisy	Nicotiana
Ageratum	Dianthus	Pansies
Alyssum, Sweet	Dusty Miller	Petunias
Asters	Eschscholtzia	Phlox Drummondii
Bachelor Button	Gaillardia	Poppy
Balsam	Geranium	Portulaca
Begonias	Heliotrope	Salvia
Calendula	Hollyhock (Annual)	Scabiosa
Calliopsis	Lobelia	Snapdragon
Candytuft	Mallow (Annual)	Stocks
Cockscomb	Marigold	Verbena
Coleus	Nasturtium	Vinca
Cosmos		Zinnia

### WINDOW BOXES

Window or porch boxes may be used to advantage on many houses, especially where there is no lawn about the house. They consist of boxes of any convenient length, to fit the space they are intended for. They should be from 8 to 10 inches wide and about 12 inches deep. Holes should be bored in the bottom, every 6 inches, to permit surplus water to run through. Cover these holes with broken pottery or stones so that they will not become clogged with earth. Use well prepared garden soil to fill the box. Nasturtiums, Marguerites, Cannas, Geraniums, Petunias, Sweet Alyssum, ferns and other plants may be used to plant in them.

## Classification of Flowers

Some plants complete their development and exist for one year only, others two years, and still others that thrive and bloom season after season without renewing.

This variation in the longevity of plant life has given rise to the following classification, each branch of which calls for variation in method of culture, though in many instances not very pronounced.

**ANNUALS**—Plants which live but one year.

**BIENNIALS**—Plants which live for two years.

**PERENNIALS**—Plants which live more than two years.

**HARDY ANNUALS (Early Blooming).** For early blooming sow the seed of nearly all the varieties of this class of plants in the early Spring as soon as the weather becomes settled.

## Cultural Directions for Starting Seeds Indoors

For all conditions except in the open, seeds may be sown in seed flats. These are boxes which can be very conveniently and cheaply made from the pine boxes largely used for packing canned goods, soaps, etc., usually 9 or 10 inches deep, which is sufficient to allow of cutting them with a rip saw into three sections each about 3 inches high. The top and bottom of the box will each make a complete flat, while the middle section will be a frame which can be provided with a bottom by the destruction of a box for each three sections. See illustration, page 3. Seeds may also be planted directly in the soil of the hotbed, coldframe, or in that upon the greenhouse bench. They may be sown broadcast, or, preferably, in rows. Directions for hotbeds and coldframes are given on pages 39, 40, and 41.

In covering seeds the rule under artificial conditions is to bury the seed to the depth of its greatest diameter. In outdoor culture, however, this is not the practice; seeds are usually covered about three to five times their diameter. With seeds the size of a grain of wheat it is, in general, safe to plant them 1 inch deep, and for those the size of Beans 2 inches deep. Small seeds like those of Petunia, Poppy, Snapdragon, etc., should be scattered over the surface and the soil compacted with a float or board.

**TREATMENT OF SEED BED.** Keep the seed boxes in a warm place, and the soil quite moist, and the water, which should never be cold, must be applied in the form of a fine spray, until the plants appear, after which the soil should be thoroughly watered at regular intervals and no more water added until the surface soil begins to get dry, for if kept too moist all of the time, there is danger of the plants damping off, and again, if a little water is added frequently the top of the seed bed may look moist while the bottom of the bed into which the roots of the plants are to penetrate and which should be moist, may become very dry, causing shallow rooting, hence the necessity for saturation at regular intervals.

The seed beds and plants should have plenty of air.

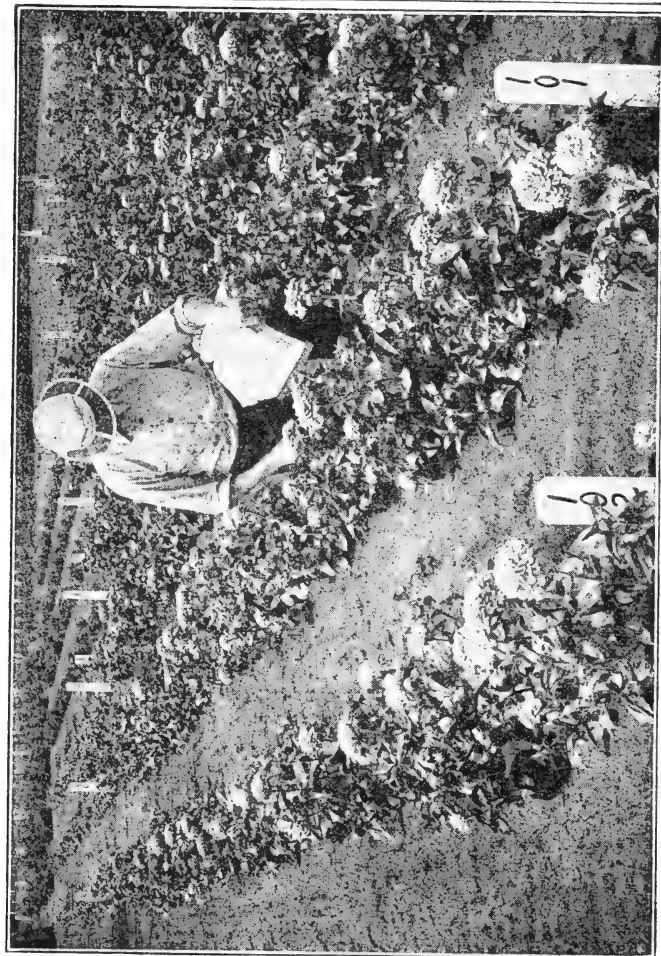
**TRANSPLANTING.** The young seedling plants which are to be grown for their bloom should, as soon as the first true leaves are formed, be transplanted so that they will stand at some distance from one another. For small, rather slow-growing, plants, such as Pansies, 1 inch apart each way will afford ample room, but with most plants 2 inches each way will be best, while with robust-growing plants, like the Castor Bean, 4 inches will not be too much. With such plants, however, it is best to place the seeds directly in pots or cans in order to prevent disturbing the roots of the young seedlings and to afford them ample space. Transplanting has a tendency to make the plants stocky and helps the development of an extensive root system.

**SHADE AT TRANSPLANTING TIME.** Newly transplanted plants should be shaded from the sun for a few days. For this purpose shingles stuck in the ground at an angle, the top extending over the plants, empty flower pots, tin cans, etc., come in handy.

In transplanting care must be taken to firm the soil well around the roots and to set the plants considerably deeper than when growing in the original bed.

#### PLANTS REQUIRED to FILL A CIRCULAR BED

Diameter	6 in. Apart	12 in. Apart	18 in. Apart
3 feet	28	7	..
4 feet	48	12	6
5 feet	80	20	8
6 feet	112	28	13
7 feet	152	38	17
8 feet	200	50	23
9 feet	256	64	28
10 feet	320	80	36



Recording the tests of zinnias in Northrup, King & Co.'s Trial  
Grounds near Minneapolis.

## Cultural Directions for Each Variety of Flowers

The letter after each variety indicates the direction to be followed. (See pages 27-28.)

The names of some varieties, for example Gaillardia, are followed by the letters C and P indicating that the Hardy Annual cultural directions should be used for Annual Gaillardia and the Perennial directions for Perennial Gaillardia.

<b>Abronia</b> .....	<b>P</b>	<b>Centrosema</b> .....	<b>C</b>
<b>Abutilon</b> .....	<b>N</b>	<b>Chrysanthemum</b> .....	<b>N</b>
<b>Achillea</b> .....	<b>P</b>	<b>Chrysanthemum,</b>	
<b>Adlumia</b> .....	<b>P</b>	Perennial .....	<b>P</b>
<b>Adonis</b> .....	<b>P</b>	<b>Clarkia</b> .....	<b>C</b>
<b>Ageratum</b> .....	<b>N</b>	<b>Cobaea</b> .....	<b>N</b>
<b>Agrostemma</b> .....	<b>P</b>	<b>Coccinea</b> .....	<b>C</b>
<b>Alyssum</b> .....	<b>C</b>	<b>Cockscomb</b> .....	<b>C</b>
<b>Allegheny Vine</b> .....	<b>P</b>	<b>Coleus</b> .....	<b>K</b>
<b>Amaranthus</b> .....	<b>E</b>	<b>Convolvulus</b> .....	<b>C</b>
<b>Ambrosia</b> .....	<b>C</b>	<b>Coreopsis</b> .....	<b>P</b>
<b>Anchusa</b> .....	<b>C, P</b>	<b>Cosmos</b> .....	<b>C</b>
<b>Anemone</b> .....	<b>P</b>	<b>Cyclamen</b> .....	<b>V</b>
<b>Anthemis</b> .....	<b>P</b>	<b>Cypress Vine</b> .....	<b>C</b>
<b>Antirrhinum</b> .....	<b>N</b>	<b>Dahlia</b> .....	<b>See Page 31</b>
<b>Aquilegia</b> .....	<b>P</b>	<b>Daisy, English</b> .....	<b>P</b>
<b>Arabis</b> .....	<b>P</b>	<b>Daisy, Shasta</b> .....	<b>P</b>
<b>Arctotis</b> .....	<b>C</b>	<b>Daisy, Swan River</b> .....	<b>C</b>
<b>Armeria</b> .....	<b>P</b>	<b>Datura</b> .....	<b>C</b>
<b>Aster</b> .....	<b>See Page 28</b>	<b>Delphinium</b> .....	<b>P</b>
<b>Baby's Breath</b> .....	<b>C, P</b>	<b>Dianthus</b> .....	<b>C</b>
<b>Bachelor's Button</b> .....	<b>C</b>	<b>Digitalis</b> .....	<b>P</b>
<b>Balloon Vine</b> .....	<b>C</b>	<b>Dolichos</b> .....	<b>C</b>
<b>Balsam</b> .....	<b>C</b>	<b>Echinocystis</b> .....	<b>See Page 26</b>
<b>Begonia</b> .....	<b>K</b>	<b>Eryngium</b> .....	<b>P</b>
<b>Bellis</b> .....	<b>P</b>	<b>Eschscholtzia</b> .....	<b>C</b>
<b>Bird of Paradise</b> .....	<b>N</b>	<b>Evening Primrose</b> .....	<b>C</b>
<b>Black Eyed Susan</b> .....	<b>C</b>	<b>Feverfew</b> .....	<b>C</b>
<b>Brachycome</b> .....	<b>C</b>	<b>Forget-Me-Not</b> .....	<b>P</b>
<b>Bridal Veil</b> .....	<b>C</b>	<b>Four O'Clocks</b> .....	<b>C</b>
<b>Browallia</b> .....	<b>C</b>	<b>Foxglove</b> .....	<b>P</b>
<b>Calceolaria</b> .....	<b>N</b>	<b>Gaillardia</b> .....	<b>C, P</b>
<b>Calendula</b> .....	<b>C</b>	<b>Geranium</b> .....	<b>N</b>
<b>Calliopsis</b> .....	<b>C</b>	<b>Gilliflower</b> .....	<b>C</b>
<b>Callirhoe</b> .....	<b>P</b>	<b>Globe Amaranth</b> .....	<b>E</b>
<b>Campanula</b> .....	<b>P</b>	<b>Gloxinia</b> .....	<b>K</b>
<b>Canary Bird Vine</b> .....	<b>C</b>	<b>Godetia</b> .....	<b>C</b>
<b>Candytuft</b> .....	<b>C</b>	<b>Golden Rod</b> .....	<b>P</b>
<b>Candytuft, perennial</b> .....	<b>P</b>	<b>Gomphrena</b> .....	<b>E</b>
<b>Canna</b> .....	<b>See Page 30</b>	<b>Gourd</b> .....	<b>C</b>
<b>Canterbury Bells</b> .....	<b>P</b>	<b>Gypsophila</b> .....	<b>C, P</b>
<b>Cardinal Climber</b> .....	<b>N</b>	<b>Helenium</b> .....	<b>P</b>
<b>Carnation</b> .....	<b>N</b>	<b>Helianthus</b> .....	<b>C</b>
<b>Celosia</b> .....	<b>C</b>	<b>Helianthus</b> .....	<b>P</b>
<b>Centaurea</b> .....	<b>C</b>	<b>Helichrysum</b> .....	<b>E</b>

Heliotrope .....	N	Oenothera .....	C
Hesperis .....	P	Oxalis .....	P
Hibiscus .....	P	Pansy .....	T
Hollyhock .....	C, P	Pentstemon .....	P
Honesty .....	P	Petunia .....	N
Hop, Japanese .....	C	Phacelia .....	C
Humulus .....	C	Phlox Annual .....	C
Hunnemania .....	C	Physalis .....	N
Hyacinth Bean .....	C	Physostegia .....	P
Iberis .....	P	Pinks .....	C
Ivy .....	P	Platycodon .....	P
Knotweed .....	P	Poinciana Gillesi .....	C
Kochia .....	C	Polemonium .....	P
Kudzu Vine .....	C	Polygonum .....	P
Lady Slipper .....	C	Poppy, perennial .....	P
Lantana .....	N	Poppy .....	U
Larkspur .....	N	Portulacca .....	C
Lathyrus .....	P	Pot Marigold .....	C
Lavatera .....	C	Primula .....	C
Lavender .....	P	Pueraria .....	C
Liatris .....	P	Ricinus .....	N
Linaria .....	N	Rudbeckia .....	P
Linum .....	P	Salpiglossis .....	C
Lobelia .....	N	Salvia .....	N
Lupinus .....	P	Scabiosa .....	C, P
Lychnis .....	P	Sea Pink .....	P
Lythrum .....	P	Sea Holly .....	P
Mallow .....	C, P	Snapdragon .....	N
Marigold .....	C	Stock, Evening Scented .....	C
Marvel of Peru .....	C	Stocks .....	C
Matricaria .....	C	Stokesia .....	P
Matthiola .....	C	Sunflower annual .....	U
Maurandia .....	C	Sunflower, perennial .....	P
Mignonette .....	C	Swan River Daisy .....	C
Mimulus .....	K	Sweet Peas .....	See Page 29
Minneapolis Vine .....	C	Sweet Rocket .....	P
Monarda .....	P	Sweet Sultan .....	C
Moonflower .....	N	Sweet William .....	P
Morning Glory .....	C	Thunbergia .....	C
Mountain Rose .....	P	Tritoma .....	P
Mourning Bride .....	C	Verbena .....	N
Myosotis .....	P	Veronica .....	P
Nasturtium .....	C	Viola .....	T
Nemophila .....	C	Wallflower .....	N
Nicotiana .....	N	Wild Cucumber .....	See below
Nigella .....	C	Wild Lupine .....	P
		Zinnias .....	N

**CANNAS FROM SEED**

See Page 30.

**DAHLIAS FROM SEED**

See Page 31.

**ECHINOCYSTIS OR WILD CUCUMBER**

Should be sown in the Autumn, or if in Spring, file through the hard, outside shell. Otherwise the seeds will probably not sprout until the year after sowing. Sow in good soil where the vines are to grow, planting seeds about  $\frac{3}{4}$ -inch deep.

## **“Key” for Letters Used in Above List and Cultural Directions**

### **HARDY ANNUALS**

**C** Sow out of doors, when danger from frost is over, in the bed or border where they are to flower. The soil should be well pulverized and the seed covered to a depth of about 4 times their size. Press down firmly with a board, and thin out so that the plants will not become crowded. For early flowering they should be sown indoors in a shallow box, or in a hotbed, transplanted as previously suggested, and transferred to the open ground when the weather becomes suitable.

### **EVERLASTINGS**

**E** Culture same as suggested in above paragraph. If desired to keep flowers as everlastings cut when the buds are a little more than half opened, and suspend in a dark, dry place, with the heads down until fully dry.

### **BEGONIAS, COLEUS, GLOXINIA**

**K** Sow the seed early in the year in pots or pans filled with very fine prepared soil. A slight sprinkling after sowing will settle the seeds to a sufficient depth, as they should never be covered. Place a sheet of glass over the top allowing some space for the air to enter, and set in saucers, which should be kept filled with water to provide sufficient moisture; as the minute seeds should never be disturbed by watering. Place in a partially shaded situation. Transplant when large enough to handle, grow on, and shade at all times from the strong sun.

### **TENDER ANNUALS**

**N** Tender Annuals should not be sown in the open ground before latter part of May. The best plan is to start the seeds indoors in a shallow box or in a hotbed, in a temperature of about 65 degrees. Cover the seeds to a depth of four times their size and press the surface firm with a board. Water with a fine spray. Transplant the seedlings after the second leaves form and remove to the garden when the weather is warm and settled.

### **PERENNIALS AND OTHERS REQUIRING SIMILAR TREATMENT**

**P** Hardy plants usually bloom the year after sowing the seed. The seed bed must be well drained, fine and firm. If the soil is at all heavy cover with one inch of sand. The seed may be planted from June 10th to early July, early June is best. After soaking the seed 24 hours, sow the fine sorts in rows, 3 inches apart, on the surface of sand or well sifted soil, and press down with a board. Large seeds may be covered to twice their thickness. The bed must be kept shaded constantly with a screen made as follows: nail common laths 2 inches apart on end strips. Place this screen over the bed on 4 bricks set endwise. Water as required; when seedlings have two pairs of

leaves, transplant into rows a few inches apart each way, and later when they begin to crowd transplant a second time. This involves extra work but is necessary to raise sturdy plants. Keep them shaded with the screens all summer. In September, if well developed, they may be placed in their permanent locations where they are to blossom the following year, or left in the seed beds for early spring transplanting. After the ground freezes hard, cover with evergreen or other branches and a few inches of straw or leaves loosely piled on top. In late March, remove one-half the top mulch and loosen up the rest, to admit air. Take off the remainder gradually, as the season advances.

### PANSIES AND VIOLAS

**T** For spring plants the seed may be sown broadcast from July to September. Cover the seed very lightly with fine soil and press in with a board; then mulch the seed bed with long, loose, strawy manure, to a depth of 3 or 4 inches. The seed will be up in about 10 or 15 days; then remove the straw a little at a time. Transplant the seedlings to beds or frames in September or October; and after a sharp frost, late in November or early December, provide a light or loose mulch of hay, straw or litter. The seed may also be sown indoors in January or February, or in Spring in the open ground in a shady location. The soil should be very rich and liberal applications of bone meal should be given from time to time.

### ANNUAL POPPIES, ETC.

**U** Sow in the open ground after danger from frost is over, in beds of well-pulverized soil. The plants should remain where sown, as they will not stand transplanting unless done with extraordinary care. Thin out carefully so as to disturb the remaining plants as little as possible. For succession of bloom, two or three sowings can be made at intervals during the Summer.

### CYCLAMEN

**V** The best time to sow the seed is as soon as ripe, usually in September, in gentle heat, in shallow boxes or pans filled with a compost of sandy loam, leaf mould and coarse sand. Cover the seed with a layer of finely chopped sphagnum moss about 1 inch deep and keep this moist. Water carefully and keep at a uniform temperature of 50 to 60 degrees. When the plants have made 2 leaves transplant into small pots. Grow on until the plant requires a 5-inch pot.

### ASTERS

The cultivation of the Aster is simple. Do not sow the seed too early; the middle of March indoors is considered a very good time. Successive sowings should be made, if a constant supply of flowers is desired from July until frost. For early use sow the seed in shallow boxes, covering with one-fourth inch of soil. Later sowings may be made in hotbeds or cold frames; or in the open ground, broadcast or in drills, when all danger of frost is past. Never use the same ground or location twice in succession. The soil should be rich and moist. We recommend pulverized sheep manure, wood ashes and phosphates as fertilizers. If barnyard manure is used it should be thoroughly



decomposed. Allow plants plenty of room; rows should be 3 feet apart and 15 inches between the plants in the row, but the distance may be less according to the habit or growth of the variety.

The aster beetle or fly is one of the worst pests but there seems to be only one crop of them, and these if caught and killed are not usually followed by others. Dusting the plants with air slacked lime or dry ashes will be found beneficial. Root lice and cut worms are also troublesome. Applications of kerosene emulsion or tobacco water around the roots are effective. Aster blight or "yellows" can usually be traced to the work of the above pests.

The plants should be pulled and burned if they should become badly diseased. Growers should remember that prevention is better than cure. Good cultivation and the timely use of the remedies suggested should produce healthy, vigorous plants.

## Sweet Pea Culture

**Preparation Soil.** Prepare a trench 2 feet deep and at least 1½ feet wide. Fill in with a mixture of rich loam and well rotted barnyard manure or 5 lbs. of sheep manure and 1½ lbs. of bone meal for each 8 feet of row. Cover with 6 inches of good soil. The manure should be worked in deep down and carefully mixed through the soil at bottom of trench.

The trench should slope gradually towards the center, which is to be 2 inches deeper than the sides.

**Planting.** Should be done the first day the soil is dry enough to work without becoming sticky. If the soil is worked while wet it may ruin the crop.

White Seeded Sweet Peas should not be sown until the ground has thoroughly thawed. Sweet Peas require a long period of slow growth under cool conditions which are necessary for good root formation. Late sown Sweet Peas, especially when planted after May 15th are seldom worth while. Sow 1 lb. of seed for 100 feet of row.

Make a furrow in the center of trench 6 inches wide and 3 deep. Sow the seed in this furrow in two rows, 4 inches apart and 2 inches apart in the row. Cover with about an inch of fine soil and tamp down firmly. If soil is damp and heavy tamp more lightly than if dry and loose. After tamping, rake another inch of soil over seed. Do not cover seed more than 2 inches deep altogether.

**Cultivation.** When vines are 5 inches high, fill up the 4 inches between the rows with fine soil, drawing the soil to each side, covering the vines to within an inch of their tops. Do not cover up the vines entirely. Straighten any crooked plants and remove weeds. After the vines have grown another 5 inches repeat the operation; at this time hoe up the soil outside the rows to a level with the soil around the vines, so that what was originally the trench becomes a ridge.

**Supports.** Never allow vines to fall over, as they can not be properly straightened afterwards, but support with brush, wire netting or strings.

**Mulching.** Before blooming time fill trench between the rows with straw or grass clippings. This will keep the soil cool and moist.

**Watering.** Sweet Peas like plenty of water in dry weather. After blooming begins, fill the trench between the rows with water two or three times a week, if there is a lack of showers.

**Tiling.** Growth and bloom of Sweet Peas will be increased if a line of 3 inch porous drain tile is placed a few inches beneath the trench. By bringing this to the surface with an elbow, water may be readily applied to the roots.

**Cutting.** Should be attended to every day, whether you have use for the flowers or not. If seed pods are allowed to form, the vines will soon cease blooming. In the afternoon or early evening is the best time for cutting. The flowers being then fully developed and hardened, last much longer in water.

It is only necessary to cut each day the flowers that are fully developed. It is after forming seed pods that they injure the vines.

Be careful in cutting not to disturb or break the vines. Carelessness in this will soon ruin them.

It is best not to step too near the vines when picking the flowers, as this would pack the soil surface, which should be kept loose and open.

**Enemies.** For slugs and cut worms a little air-slacked lime around the young shoots will protect them more or less and sometimes the worms can be attracted and killed by putting a bunch of green grass dipped in Paris Green near the Sweet Pea row.

For plant lice or aphids use "Black Leaf 40." Nico-Fume Liquid or some other tobacco extra spray.

**Sow 1 lb. of seed for 100 feet of row.**

## Cannas From Seed and Plants

In this locality Canna plants should not be set out much before Memorial Day as they are very tender. They should be planted in rich soil, 18 inches apart.

In the Autumn the plants should not be lifted until after a sharp frost, then take up with as much soil as possible, being careful not to break or damage the roots. Cut off half the tops and store in shed or cellar. When the remaining foliage becomes perfectly dry it may be cut off to a height of 3 inches, then the roots, still with the dirt on them, should be stored where the temperature will be from 40 to 45 degrees. The roots should never be allowed to freeze nor entirely dry up. The roots may be placed on a rack or even on a dry cellar floor. Cover with a layer of straw to hold the moisture. In January or February clean the roots, divide into pieces with 3 or 4 eyes each and start in flats or pots in house or conservatory.

**CANNA SEEDS** should be filed through the hard shell to allow moisture to enter. Then start indoors as previously suggested for Tender Annuals.

## Dahlias From Seed and Tubers

These can be started from seed as previously described for Tender Annuals. In the Fall the tubers should be lifted as described below.

The usual method of raising Dahlias is to start the tubers indoors in April, placing them in shallow boxes of dirt. These can be kept in a cellar or outhouse until late May or early June when the plants should be transplanted outdoors. Plant in an open sunny situation; 3x3 feet is about the proper distance apart to plant. Prepare the soil thoroughly by digging. Be moderate in the use of both manure and water. Never plant when soil is wet. Lay the tuber flat on its side and cover it 4 inches deep, pressing the soil firmly on the tuber. Keep the soil loose and mellow by frequent hoeing, drawing the soil to a slight hillock around the plant. It is also advisable to use a mulch of straw or grass clippings around the plants to keep the soil from drying out. It is not well to water the plants except just enough to insure the soil being moist.

After frost has killed the tops, dig the tubers carefully leaving 6 inches of the main stem on every clump, taking up with them all the soil which adheres to the roots.

All clumps should be divided into several pieces before being reset each Spring. In doing this it is necessary to split the main stem, leaving a section of this on each tuber.

## Gladiolus Culture

The Gladiolus thrives in a sunny location, protected from wind. It appears to best advantage when planted among Peonies, shrubbery or in masses of rows bordered with some lower growing plants such as Candytuft, or Bachelor's Buttons. These make a pleasing contrast with the Gladioli.

Gladiolus bulbs will grow in any good garden soil, but do much better when the latter has been enriched with well rotted manure. If the bulbs are planted at intervals from April to June the blooming period will extend from July until frost. A trench should be dug five inches deep and an inch of sand placed in the bottom to absorb surplus moisture. Then set the bulb (flat or hollow side down) in the sand.

For earliest blossoms, draw 2 inches of soil over the bulbs at first, replacing the rest when the shoots appear. As the leaves develop, more earth should be drawn up around the base, to furnish support for the stalk. Keep the bed free from weeds and give plenty of water, especially during the blooming period. When the flower buds appear they should be staked.

Before the ground freezes lift the bulbs, cut off half the foliage and remove to a cool shed or cellar. Here they should be spread out to dry, leaving plenty of air space between all bulbs and tops to prevent mould. A convenient method is to stand them up in flats which are then piled in tiers.

After the tops dry up they should be cut off with a sharp knife or pruning shears. At this time also, the bulbs may be separated and the small side growths, of bulblets removed. The latter may be handled like the big bulbs. Then the bulbs are placed in paper bags, sawdust or sand to prevent them from becoming too dry. Lastly, remove to a storage room having a temperature of about 35 degrees to prevent sprouting.

## Hardy Lilies

In general fall planting is recommended for lilies, but the Japanese varieties do not usually reach this country before late November or December. The bulbs are shipped as soon as possible but cannot be dug until they are ripe.

For this reason it is advisable to mulch the ground heavily where these are to be planted and thus keep it open. Otherwise they may be planted in the early Spring. Set bulbs of the large Japanese varieties ten or twelve inches deep in rich, well drained soil with a handful of sand under each bulb. Plant the large bulbs 18 inches apart and the small ones 6 inches. Cover with a deep layer of leaves or straw each Autumn.

## Iris

Plant in a sunny location, setting the roots quite shallow. They will be ready for planting from March to May and can also be supplied from September to November.

## Peonies

Set the roots slanting 3 to 4 feet apart each way, with the topmost buds 4 inches below the surface. They will generously repay good care; keep the soil loose and free from weeds but use manure sparingly and only after the ground is frozen. A few handfuls of bone meal worked around the crowns will greatly improve the blooms. Peonies do best in a sunny location and should be left undisturbed for years. They may be planted from April to May and September to November.

## Hardy Phlox and Other Perennials

Should be set out in April and May. These plants grow larger year after year. As the plants become stronger the blossoms increase in number and size, reaching their highest development about the third or fourth year.

On this account they require liberal "feeding" and do much better when well composted manure is forked in around the base each Fall, and bone meal in the Spring. After 4 or 5 years the clump is likely to become rootbound so it is well to divide each one, having several eyes or growing shoots on each division. The outside rootshoots should have extra good care since they will produce the best plants.

As soon as the plants are received from the nursery dip each one in a pail of liquid mud. Then plant 9 inches apart in deeply trenched, well enriched soil, being careful to spread out the roots and firm the earth so it will take a hard pull to uproot them. Lastly, use compost or other mulch around the crown to preserve soil moisture. Liberal watering every evening during the blooming period improves the blossoms. These should be removed as soon as they wilt to prolong the flowering season.

For winter protection, as soon as the ground freezes hard, lay on crowns an evergreen branch with several inches of leaves or straw loosely piled on top. About the middle of March remove one-half this litter and loosen up the rest—removing it gradually as the sun becomes warmer. Water or ice remaining on the plant crowns for any length of time is sure to destroy them.

## Spring Flowering Bulbs

### OUT-DOOR PLANTING

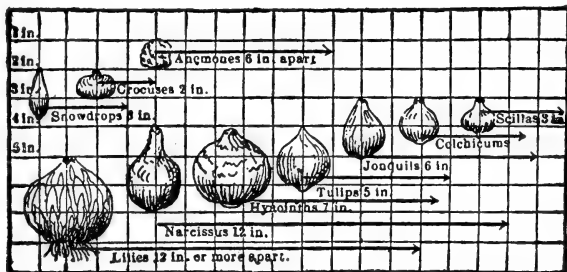
The early spring flowering bulbs such as Hyacinths, Tulips, Narcissus, Crocus, etc., must be planted in the Fall. Out-door planting may be effected at any time from the first of October until the ground is frozen.

Any good, well-drained soil will grow bulbs, but should be well spaded and pulverized. If the soil be heavy clay, mix thoroughly with sand and well rotted cow yard manure; fresh manure is injurious. Raise the center of the beds so that water will run off quickly, as the bulbs are liable to rot if water stands.

Before extremely severe weather comes on cover the beds with about four inches of leaves; if coarse manure or straw is used cover six inches. In the Spring remove half the covering and the balance as soon as the plants begin pushing through the soil.

### DEPTH AND DISTANCE OF PLANTING

The accompanying diagram shows the depth and distance apart bulbs should be planted and will enable the purchaser to correctly estimate the number of bulbs required for any given area. Spring flowering bulbs usually show to best advantage when planted in masses.



### IN-DOOR PLANTING OF BULBS

Daffodils, Polyanthus Narcissus, Single Tulips and Roman Hyacinths are the easiest to grow in-doors.

For early flowers in the house, most varieties should be potted in September, and for a succession of flowers, at intervals up to December. A very good soil for the growth of bulbs is composed of one-half good garden soil and the equal parts of well-rotted manure or leaf-mould and sand well mixed together. The size of pots used depends on the size of the bulbs and the effect desired.

In potting Narcissus leave the earth beneath them loose and fine. If this is not done the roots have a tendency to push the bulb up into the air.

Some broken pieces of pots, pebbles or charcoal should be placed in the bottom of each pot for drainage. Insert the bulb so its top will be just below the surface, then press down the soil around the sides of the pot. After thoroughly soaking the soil and pot in water, they should be placed in a cool, dark situation, so as to encourage a strong growth of roots before the bulbs start at the top. If set in the cellar, they will need a little water every ten days. Also protect them from mice and rats. In six or eight weeks they will have made sufficient root growth to admit of bringing to the light.

Success in pot culture of bulbs depends on well established roots before the tops are allowed to start. Water freely, so that the soil may be moistened to the bottom of the pots. By bringing a few pots from the cellar to the light, every week or so, a succession of flowers may be had for months, especially for Christmas and Easter.

Do not bring bulbs from the cellar to a sunny window the first thing. This applies especially to the large flowered Hyacinths. The nucleus of the flower is already folded tight in the heart of the bulb and this must pass through the narrow throat of the bulb. If the pots are brought into the bright light directly, the flower buds begin to expand too soon and then are unable to pass through the neck of the bulb.

Bring all the bulbs first to the subdued light and keep them there until a flower head can be observed. As soon as the stem beneath it can be seen the bulbs may be brought at once into the bright light. This may be full sunshine or good light without sunshine. Narcissus require sunshine.

### BULBS IN WATER

Hyacinths and several other varieties of bulbs do splendidly in water.

Paper White Narcissus are especially satisfactory as they grow rapidly and blossom within a few weeks after planting. Chinese Sacred Lilies are great favorites for handling this way too.

Steady the bulbs by placing pebbles at their base, and fill up the bowl with water. Give fresh water every few days. They should be left in the dark for several weeks, until the top growth is well started and the bowl a mass of roots.

## How to Grow Roses

Good roses may be grown in almost any garden soil and location, but they will give best results under careful treatment. Select an open, sunny place, sheltered from the cold, north winds and in soil that is clear of all roots of trees and shrubs. Dig up the bed to a depth of at least one foot, more would be better, and thoroughly mix not less than two inches of well rotted stable manure. It is best to prepare the beds some time in advance of planting to allow for settling. The best time to plant is just after the frost is out of the ground and when it is in condition for proper preparation. Make a hole slightly larger than the roots and firm the soil well around the plant. Never set the plants out when the ground is wet and soggy, but wait until it is fairly dry. After planting give a thorough watering, and during the Summer cultivate the surface of the bed every few days. In the Fall, just before frost, it is well to cut back to about three feet all the canes of the strong growing sorts. The principal pruning should be done in the Spring, thinning out branches when they become too thick and cutting out all the dead wood. Climbing Roses require no pruning except to cut out all dead wood and the shortening of lateral branches.

In this locality Roses require protection during the Winter. This can be done by carefully bending the canes to the earth and covering with a sod, and over this place leaves, straw or other protection. The covering should not be removed in the Spring until danger from heavy frost is over, but before growth has commenced. Success in the growth of Roses depends largely on the care given the plants after setting out. The soil should be frequently cultivated so as to keep it mellow and free from weeds. Care should be exercised, however, not to stir the soil too deeply and injure the young roots. It is well also, to remove all flowers in their prime.

**Green Fly (Aphis).** Colonies of these attack the young growth and suck the juice of the plant. Spray with tobacco solution or dust with tobacco powder after wetting the plants. Nico-Fume Liquid is especially effective.

**Rose Slug.** A light green worm that eats the leaves. Apply fish-oil soap, 1 lb. dissolved in 8 gallons of water. Paris Green, 1 oz. to 10 gallons of water or arsenate of lead.

**Mildew.** This grayish-white film on the affected leaves can be controlled by spraying with Bordeaux Mixture, 1 pint in 6 to 8 gallons of water.

## How to Care for Shrubs

Before planting, the soil should be thoroughly prepared by spading with the addition of liberal quantities of manure or bone meal. The only attention needed thereafter is an occasional cultivation, to keep down weeds, and a little top dressing of manure or bone meal in the late Fall to keep up the fertility. Care should be taken not to overcrowd but allow sufficient room for future growth. Shrubs of all kinds are best planted in the Spring as soon as the frost is out and

ground in condition for preparation. This gives them a chance to make root growth before hot weather. No rule can be given as to the proper time and method of pruning shrubs, but we would say that those blossoming before mid-summer should be pruned immediately after flowering, as these produce flowers on the growth of wood made the previous year. Those varieties which blossom after mid-summer produce their blooms on wood made the same season, and these should be pruned in early spring, being careful not to prune too much, as all that is necessary is to keep the plant in nice shape. It is well, however, to cut out all dead wood and to remove surplus growth when the shrubs branch too freely, as plenty of air and sunshine is essential for satisfactory results.

## Small Fruits

### STRAWBERRIES

A rich, well drained loam soil, having plenty of available humus and plant food is best for Strawberries. If necessary to enrich the soil just before planting, use only commercial fertilizer, well rotted compost or sheep manure, to avoid weed seeds.

**Plants.** Use only the best plants. Inferior ones or those that have fruited once do not pay to set out.

**Planting Time.** Planting from April 25th to May 15th is best for the Northwest.

**Setting Plants.** Upon arrival dip roots into liquid mud and keep them moist, never expose to sunlight or wind. To set plants for the old matted row system, plant in rows 3 to 3½ feet apart, 12 to 15 inches apart in row. Then runners are allowed to form dense beds or rows. A better way is to plant 2 feet apart each way; first trim ends of roots slightly, spread them out fan-shape and drop each plant into the space made by forcing a spade straight down into the earth. Then work up the ear around plant and settle firmly, so crown is a trifle lower than the surface, but not covered. Water each plant.

**General Care.** Pinch off blossoms the first year, keep beds weed-free and well cultivated. Train runners around parent plant like spokes of a wheel. Thus plants develop evenly and yield well. After ground freezes, cover with 4 to 6 inches of straw.

### EVERBEARING STRAWBERRIES

The plants are not injured by late frost. If the first blossoms are killed by frost they immediately throw up new blossom stems. While these varieties will produce fruit at the same time as the ordinary Strawberries and continue to bear until frost, it is best to keep the blossoms removed until July 15th, so as to conserve the strength of the plant for the late crop. They should start to ripen the fruit about three weeks later and bear continuously until frost.

### BUSH FRUITS

All berries do best in a rich, stiff loam, rather clayey than sandy. The ground should be retentive of moisture, yet well drained. They should all be mulched after ground freezes, with straw or other coarse litter for Winter protection. For any leaf destroying worms use arsenate of lead, Slug Shot or some other insecticide. For borers, remove



the injured canes. Bordeaux mixture spraying will help check rust and blight but prevention is best—clean cultivation and proper pruning are essential. Always cultivate thoroughly until fruiting time.

**Blackberries.** Set in rows 8 feet apart, space 2 to 4 feet apart in the row. The young canes should be cut back when 2 feet high to induce branching. Remove old canes every year after fruiting. They should be gathered and burned at once to prevent insects and diseases. **Currants.** Rows 6 feet apart, 4 feet apart in row. The fruit is borne on both old and young wood but the best is on 1 year old shoots and spurs. Remove all but 4 to 8 main stems. Leave no wood over 3 years old. Shorten vigorous straggling shoots and thin out old wood. **Gooseberries.** Rows 5 feet apart, 3 feet apart in row. These bear best on 2 and 3 year wood. Prune to encourage continuous growth of vigorous shoots. **Raspberries.** Rows 6 feet apart, 4 feet apart in row. Remove old wood after bearing. Prune Black Raspberries when 18 inches high to induce branching.

### GRAPES

These should be planted in April or the first of May before the leaves start. They will do well in any good garden soil, and should be set 8 feet apart. Cut back the first Autumn, all new growth to two eyes or buds, and lay vine on ground covering with several inches of leaves. In the Spring train up to a trellis and when the new shoots are 2 or 3 inches long rub off all but the 2 strongest which are left to form canes. As growth progresses these canes may be tied to the wires. Every Fall nearly all the old bearing wood may be cut back to within 2 or 3 inches of the crown, but leaving 3 or 4 strong canes of the current year's growth. These canes are cut back to 3 feet and fastened to the wires in a fan shape the following spring.

### HOTBEDS

Hotbeds are usually constructed in one or other of the following ways:

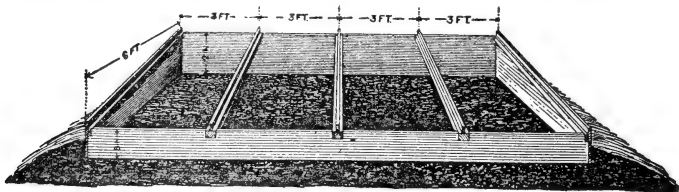
**Temporary Hotbeds.** A temporary hotbed may be made by using fermenting stable manure, preferably that with a small amount of straw or litter in it. This is placed in a broad, flat heap and thoroughly tramped down. A heap ten to twelve feet wide and six to twelve feet in length with the manure eighteen to twenty-four inches deep should give sufficient heat. Upon the surface of this a frame made eight inches high at the front and twelve inches high at the back with taper boards for ends is built. At intervals of three feet laths are laid to support the sash. If severe weather is likely to occur during the time the hotbed is in use, the frame should be banked with manure to give additional heat and protection. After placing the frame upon the manure heap, about four inches of good garden loam should be scattered over the area enclosed by the frame. After the sash has been placed in position, allow the bed to heat up, but do not plant any seeds in the bed until the temperature begins to go down, which will be in about three days after the sash has been put into place. When the temperature has fallen to ninety degrees, planting may be safely started.

**Permanent Hotbeds.** For a permanent bed, a pit two to two and a half feet in depth, and of suitable length and width should be provided. The sides and ends may be supported by a lining of 1 inch planks and held up by posts four feet apart and this pit lining should come up flush with the surface of the soil, or the lining may be of

concrete construction. The site for the pit should be on well drained land and a tile drain from the bottom of the excavation should be built to prevent water from accumulating in the pit. A standard hot-bed sash is three feet by six feet in size. The bed therefore should be some multiple of three feet in length and the width should be the same as the length of the sash—six feet. The plank frame of the bed may be extended above the surface of the ground sufficiently to allow for placing the sash immediately upon these permanent structures or a frame, such as is described for the temporary hotbeds, may be used.

In the Autumn the bed should be filled with leaves or straw and covered with loose boards or shutters to keep it free from snow and ice, in order that it may be free for use early in March. The frame may be made of good one-inch lumber, the back twelve to fourteen inches high, the front ten to twelve. It should be well fitted to the sash, so as to leave as little opening as possible and yet allow the sash to be easily moved up and down.

The best heating material is stable manure containing a liberal quantity of straw bedding. If this is thrown into a loose pile, it will heat violently and unevenly and will soon become cold. For a moderate lasting heat, the manure should be forked over, shaken apart and kept moist. Then it should be left a few days and forked over again and allowed to heat a second time, which will require two or three days more. In very cold weather it may be necessary to make the pile in a shed. As soon as the manure is ready, place it in the pit and tramp it down in layers to the required depth. Then put on the sash and leave it until the heat generates, which will usually be in about twenty-four hours.



### FRAME TO CARRY THE SASH OF A HOTBED OR COLDFRAME

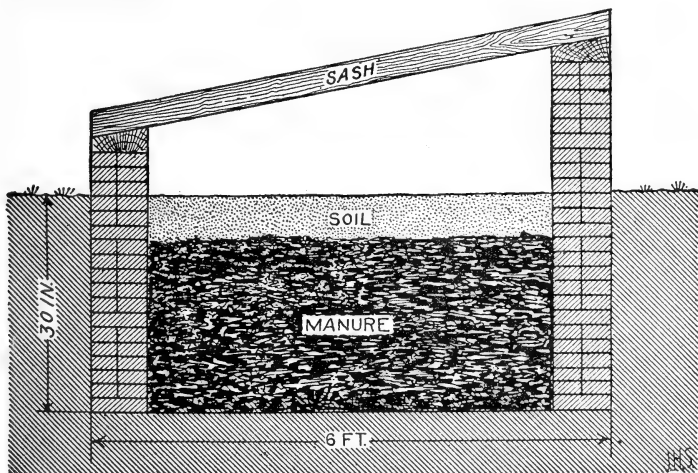
As soon as the heat goes down to ninety degrees, which will probably be in two or three days, six inches of rich, light soil should be placed on the surface. Then leave the bed for a few days until the soil has become warmed through. Later remove the sash, rake or kill the weeds, level the surface and all is ready for the sowing of the seeds.

**Care of The Bed.** At the North, in addition to the glazed sash—board shutters, straw mats or some other kind of mats will be needed as an additional protection during cold nights. Also double glass sash is now available which is a great aid in holding the heat. During bright days, even when the temperature outside is near the

freezing point, it will be necessary to lift the sash a trifle at the high side of the frame. This will allow the hot air to escape and prevent injury to the young plants.

**WATER.** Hot beds should be watered in the morning only and then only on bright days. In cloudy weather a bed may go several days without watering, but will dry up in a very short time on a sunny day. Always use tepid water put in gently with a fine rose watering pot. It is never safe to let the soil get dry.

**COLD FRAMES.** Coldframes are intended to protect plants from cold without forcing them into growth. They differ from hot beds in that no artificial means of heating are employed. The cold frame consists of a frame and sash similar to the one described in the paragraphs on Temporary Hotbeds. The back board is usually twelve inches and the front eight inches wide. The two are connected by a taper board twelve inches high at one end, eight inches wide at the other end six feet in length. The back and front of the frame are made in multiples of three feet in length. When complete, the frame is placed upon a sheltered, well-drained piece of land with a dry, southern exposure. The glass allows the sun during the bright days to temper the air of the frames so that by properly covering them at night with shutters or mats, the heat can be retained and the plants protected during severe weather. A cold frame should be managed in a way very similar to a hot bed, but of course, will not need so much ventilation.



**A permanent hotbed. From a U. S. Dept. of Agriculture Bulletin**

Care should be exercised so as not to reduce the temperature of the frame late in the afternoon as such treatment is likely to cause frost injury. Coldframes are especially valuable for protecting Lettuce, Parsley, Cauliflower and some other vegetables from late fall frosts. They are also useful for wintering over some of the less hardy perennial flowering plants.

## Fertilizers

Mixed Fertilizers are obtainable in many brands of varying grades and analyses. A careful study of soil, and crops to be grown on it, is essential to determine the proper kind for best results. It is suggested that these problems be presented to your local seed or fertilizer dealer. A suitable blend or mixture for most garden soils consists of 4% Nitrogen, 12% Phosphoric Acid and 4% Potash.

### SHEEP MANURE

Analysis: Ammonia, 2 per cent; Phosphoric Acid, 1 per cent; Potash, 2 per cent.

This is a splendid, complete fertilizer containing the necessary plant foods and is also rich in humus, or vegetable matter. It is excellent for general use either alone or in combination with other special purpose fertilizers. Having been kiln dried, there is little danger from weed seeds.

### STEAMED BONE MEAL

This is similar to the Raw Bone Meal in analysis and fertilizing value, but dissolves in the soil more quickly. It may be applied in the same way as the Raw Bone Meal and is often used in the fall at the rate of 300 to 500 pounds per acre. If used in the spring, apply with cattle manure or sheep manure to form a complete fertilizer. Bone Meal furnishes a high percentage of phosphoric acid at a reasonable price.

Analysis: Ammonia 2 per cent; total Phosphoric Acid, 24 per cent.

Use 3 to 5 pounds of Bone Meal for each tree and vine when setting it out, working it in well around the roots.

### NITRATE OF SODA (16 PER CENT NITROGEN)

Now recognized as the most desirable and most quickly available source of Nitrogen.

There is no crop grown which is not greatly improved and increased in yield by an application of Nitrate of Soda, and for successful and profitable growing of many crops it has become a necessity, especially for grass, grain, corn, and garden truck.

Use as a top dressing at the rate of 100 pounds per acre on the following vegetables when plants are well established: Beets, cabbage, cauliflower, cucumbers, celery, egg plants, lettuce, spinach and onions.

For asparagus, use at the rate of 250 pounds per acre as a top dressing after the first shoots make their appearance.

For strawberries, use 100 pounds per acre as a top dressing after the plants have blossomed.

For grass and grain, use at the rate of 100 to 200 pounds per acre when growth is well established.

For home garden, apply in soluble form, using one ounce to two gallons of water.

For sweet peas, apply in soluble form, using one ounce to two gallons of water.

Nitrate of Soda should be applied directly to the soil and should not be allowed to touch the foliage.

## Care of Lawn

### SEEDING

Seed should be sown at the rate of 100 to 125 pounds per acre or one pound for 300 square feet. While a smaller quantity can be used, it is well to be on the safe side and give weeds less opportunity to spread in places not yet occupied by the slower growing grasses.

One-half the seed should be sown in one direction, the balance scattered at right angles. This will help secure a more even distribution of seed. For large lawns a wheelbarrow seeder is invaluable. On a small area it is well to divide the land into long sections by stretching strings 6 feet apart. Then sow each strip by bending over and scattering the seed evenly through the fingers held close to the ground. Whenever possible sow just before a shower. After seeding, rake the ground carefully (using a tool with sharp iron teeth) so the seed is partly covered with earth. If the soil is dry sprinkle with a fine spray and roll. Use a 400-pound roller if you can handle it, and you can if you have one of the new style with roller-bearings.

### LAWN REPAIRING

If the lawn is in fair condition the dead leaves and grass should be removed early in the spring. When the surface is very uneven it may be necessary to fill up the hollows with loam. Then take a sharp iron rake and after first digging out the weeds scratch deep into the soil, breaking it up as fine as possible. Follow this with an application of some good commercial fertilizer, 10 to 15 pounds per 1,000 square feet or 400 pounds per acre. Wet this down at once with the hose. Allow to stand for a day or two, then sow Sterling Lawn Grass Seed liberally, using enough to cover all bare or thin spots. Lastly, roll the ground again.

### IMPORTANCE OF ROLLING

Even if the lawn be in apparently good shape, it ought to be rolled each spring to firm the soil around the roots and press the turf back against the moist subsoil so the roots can absorb the water and plant food. During the winter, freezing and thawing loosen the soil and heave the turf away from the subsoil, leaving millions of sensitive feeder roots exposed to the air. In the spring this will cause the grass to soon dry out and die. In summer, too, sun and wind tend to dry out, bake and crack the surface soil around the roots and this is equally harmful to the lawn. Rolling will remedy this trouble, keep the surface even and discourage the attacks of worms, ants and moles.

### MOWING

It is a good plan to cut the grass as soon as it gets over two inches high. It should be done often enough so that the clipping will not have to be raked off. Where the soil is very rich and the growth luxuriant, it will be necessary to catch some of the grass in a carrier on the mower, but usually the short clippings should be left, especially on a new lawn, as they act as a mulch and fertilizer. If the clippings are long, due to some delay in mowing, they should be raked off to prevent smothering the growing plants.

### WATERING

This should only be done when necessary and then the ground should be given a thorough soaking at night or on a cloudy day.

Light sprinkling freshens the color of the grass but does not provide sufficient water to soak down into the ground and supply the roots. Occasionally, it is well to lay the hose on the ground and let the water run slowly for hours.

### NORTHROP, KING & CO.'S

#### STERLING LAWN GRASS SEED

A mixture composed of the best perennial grasses to produce a fine, velvety permanent lawn in the shortest time and keep a fine appearance from early spring to late autumn. It is composed of several varieties which can thrive closer together than could plants of but one or two sorts, since the various kinds require different soil foods.

Our Sterling Lawn Grass Seed is the result of many years' experience and study of grasses, their habits and requirements. We use only the best varieties, pure, clean and free from foul seed.

Our seed is used on golf links, tennis courts, athletic fields, in parks, cemeteries and private grounds with universal success. If it will meet these requirements it is sure to make a fine turf around any well-cared-for residence.

Not only is Sterling Lawn Grass suitable for making new lawns, but it will be found equally valuable for renewing imperfect and worn-out areas.

Sterling Lawn Seed is free from chaff and weighs 30 pounds per bushel. On a new lawn use one pound for 300 square feet. Put up in 1-pound cartons and bags of several sizes.

### SHADY PLACE MIXTURE

Frequently a shady lawn which is poorly drained becomes affected with moss and coarse grasses. The moss should first be removed with a sharp rake and the tufts of coarse grass pulled up. Apply a good commercial fertilizer at the rate of 4 pounds to each 100 sq. ft., water, and then allow to stand for a day or two.

After this, sow Shady Place Lawn Mixture, which will restore the beauty to your lawn. Of course, very densely shaded places are hopeless, as no variety of grass will flourish there.

### Time Required for Maturity of Different Garden Crops Reckoned From Day of Planting the Seed

	Days		Days
Beans—String .....	45 to 65	Melon—Water .....	120 to 140
Beans—Shell .....	65 to 75	Melon—Musk .....	120 to 140
Beets—Table .....	65	Onion .....	135 to 150
Beets—Stock .....	150	Pepper .....	140 to 150
Cabbage—Early .....	105	Radish .....	30 to 40
Cabbage—Late .....	150	Squash—Summer .....	60 to 65
Cauliflower .....	110	Squash—Winter .....	125
Corn .....	70 to 120	Tomato .....	150
Egg Plant .....	150 to 160	Turnip .....	60 to 70
Lettuce—Heading .....	65	Spinach—Average time	45 to 65

### Number of Plants Produced From An Ounce of Seed

	Plants	Egg Plant .....	1,000
	Plants	Endive .....	3,000
	about	Kale .....	2,000
	about	Leek .....	1,000
Asparagus .....	300	Lettuce .....	3,000
Broccoli .....	2,000	Pepper .....	2,000
Cabbage .....	2,000	Tomato .....	3,000
Cauliflower .....	2,000	Sage .....	1,000
Celery .....	3,000	Thyme .....	5,000

### HELPFUL HINTS TO GARDENERS

Decide early how much ground you will use and what you will plant.

Plow or spade before the ground freezes, if you can. A little fertilizer or manure will insure better crops.

Don't cover the seed too deep. It will germinate more quickly if only a little soil is on the seed.

Leave the garden alone until the plants come up. If you have sown bulk seeds, thin rows after plants are up an inch or two.

Lima beans should be planted with the eye down and covered one inch deep.

Sow radishes directly in the row with your parsley.

Plant early everything but beans, wrinkled peas, and vine crops.

If soil is dry, water may be put on. Let it run slowly and don't spare the water—it's cheap.

Don't think water will take the place of thorough cultivation—it won't.

Weeds are garden robbers. Kill them when they are small.

Plant enough to have some vegetables for home canning.

Hoe often to loosen the soil and hold moisture around the roots of the plants.

A small hand cultivator will make you feel like a professional gardener. It will soon pay for itself, too.

Don't try "watchful waiting" for bugs, worms and other vermin. Swat 'em or they will spoil your plants.

Never cultivate or handle any kind of beans when the vines are wet. This is the easiest way to spread a serious disease and ruin the crop.

## Vegetable Seeds Required to Plant an Acre Also For Smaller Areas

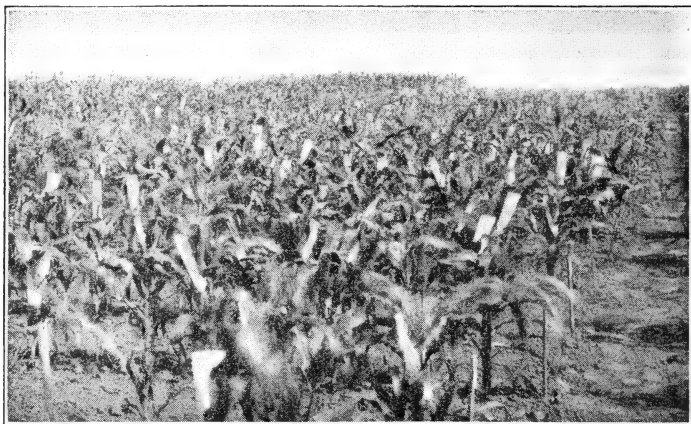
		Per Acre
Artichoke.....	1 oz. to 500 plants.....	
Asparagus.....	1 oz. to 50 ft. drill.....	4 to 5 lbs.
Beans, dwarf.....	2 lbs. to 100 ft. drill.....	1 to 1½ bu.
Beans, lima.....	2 lbs. to 100 hills.....	12 qts.
Beans, pole.....	2 lbs. to 100 hills.....	12 qts.
Beets, garden.....	1 oz. to 50 ft. drill.....	5 to 6 lbs.
Beets, mangel.....	1 oz. to 100 ft. drill.....	5 to 6 lbs.
Broccoli.....	1 oz. to 2,000 plants.....	½ lb.
Brussels Sprouts.....	1 oz. to 2,000 plants.....	½ lb.
Cabbage.....	1 oz. to 2,000 plants.....	½ lb.
Carrot.....	1 oz. to 100 ft. drill.....	4 lbs.
Cauliflower.....	1 oz. to 2,000 plants.....	12 oz.
Celery.....	1 oz. to 2,000 plants.....	1 lb.
Celeriac.....	1 oz. to 3,000 plants.....	1 lb.
Chicory.....	1 oz. to 200 ft. drill.....	3 lbs.
Citron.....	4 oz. to 100 hills.....	4 to 5 lbs.
Collards.....	1 oz. to 2,500 plants.....	4 oz.
Corn, sweet.....	1 lb. to 100 hills.....	10 to 15 lbs.
Corn Salad or Fetticus.....	3 oz. to 100 ft. drill.....	
Cress or pepper grass.....	½ oz. to 100 ft. drill.....	2 to 3 lbs.
Cucumber.....	1 oz. to 50 hills.....	2 to 3 lbs.
Egg Plant.....	1 oz. to 1,000 plants.....	4 oz.
Endive.....	1 oz. to 150 ft. drill.....	4½ lbs.
Gourd.....	2 oz. to 100 hills.....	3 to 4 lbs.
Kale or Borecole.....	¼ oz. to 150 ft. drill.....	4 oz.
Kohl Rabi.....	¼ oz. to 200 ft. drill.....	2 lbs.
Leek.....	1 oz. to 100 ft. drill.....	4 lbs.
Lettuce.....	¾ oz. to 100 ft. drill.....	4 to 5 lbs.
Melon, Musk.....	1 oz. to 60 hills.....	4 to 5 lbs.
Melon, Water.....	1 oz. to 30 hills.....	4 to 5 lbs.
Mustard.....	1 oz. to 80 ft. drill.....	
Okra.....	1 oz. to 400 plants.....	
Onions.....	1 oz. to 100 ft. drill.....	5 to 6 lbs.
Onions for sets.....	In drills.....	60 to 75 lbs.
Onion Sets.....	1 qt. to 20 ft. drill.....	12 to 15 bu.
Parsley.....	1 oz. to 150 ft. drill.....	6 lbs.
Parsnip.....	1 oz. to 200 ft. drill.....	5 lbs.
Peas.....	2 lbs. to 100 ft. drill.....	2½ to 3 bu.
Pepper.....	1 oz. to 2,000 plants.....	3 oz.
Potato.....		10 to 12 bu.
Pumpkin.....	¼ lb. to 30 hills.....	4 to 6 lbs.
Radish.....	1 oz. to 100 ft. drill.....	8 to 10 lbs.
Rhubarb.....	1 oz. to 75 ft. drill.....	
Ruta Baga.....	1 oz. to 150 ft. drill.....	1 lb.
Ruta Baga.....	broadcast.....	2 to 3 lbs.
Salsify or Vegetable Oyster.....	1 oz. to 75 ft. drill.....	10 lbs.
Spinach.....	1 oz. to 100 ft. drill.....	12 to 15 lbs.
Squash, running.....	2 oz. to 100 hills.....	3 to 4 lbs.
Squash, bush.....	4 oz. to 100 hills.....	4 to 6 lbs.
Tomato.....	1 oz. to 1,000 plants.....	¼ lb.
Turnip.....	1 oz. to 150 ft. drill.....	2 lbs.

**Seed is the smallest item of cost in making a garden.  
Plant the brand you know is dependable in your locality.**



## Information About Flowers

VARIETY	COLOR	HEIGHT	SEASON OF BLOOM
Ageratum.....	blue, white.....	12 to 18 in.	Early Summer to Fall
Alyssum.....	white.....	3 to 6 in.	Early Summer to Fall
Asters.....	white, pink, lavender, purple, yellow.....	1 to 3 ft.	Fall
Bachelor Button.....	blue, white, pink.....	1½ to 2 ft	Early Summer to Fall
Balsam.....	white, pink, red, yellow.....	18 in.	Mid-summer to Fall
Calendula (Pot Marigold).....	yellow, orange.....	9 in.	Early Summer to Fall
Calliopeis.....	yellow, brown.....	18 in.	Early Summer to Fall
Canterbury Bells.....	blue, white, pink.....	24 to 30 in.	Midsummer
Candituft.....	white, pink, red, purple.....	12 in.	Early Summer to Fall
Carnation, Marguerite.....	white, pink, red, yellow.....	18 in.	Fall
Castor Bean.....	ornamental.....	4 to 7 ft.	Summer
Chrysanthemum, annual.....	white, yellow, red.....	18 in.	Early Summer to Fall
Cosmos.....	white, pink, red.....	30 in.	Summer to Fall
Delphinium (perennial).....	blue, white, yellow.....	24 to 60 in.	Summer to Fall
Diathus or Pinks.....	white, red, pink, striped.....	12 in.	Summer to Fall
Echscholtzia, Calif. Poppy.....	yellow, white, orange.....	9 in.	Summer to Fall
Forget-Me-Not.....	blue, white, pink.....	6 in.	Early Summer
Gaillardia.....	yellow, red.....	18 in.	Midsummer to early Fall
Gourds.....	fruit bearing.....	15 ft. climb	Summer to Fall
Helianthus, sunflower.....	yellow.....	36 to 72 in.	Summer to Fall
Hollyhock.....	red, white, yellow, pink.....	60 to 84 in.	Midsummer
Larkspur, annual.....	red, white, pink, blue.....	15 in.	Early Summer to early Fall
Lupins, annual.....	pink, blue, yellow.....	24 in.	Midsummer
Marigold.....	yellow and orange.....	8 to 36 in.	Summer to Fall
Mignonette.....	green with white & red.....	12 in.	Summer to Fall
Morning Glory.....	red, white, blue.....	15 to 20 ft.	Early Summer to early Fall
Nasturtium, Tall.....	yellow, red, orange, pink.....	6 to 8 ft.	Early Summer to Fall
Nasturtium, Dwarf.....	yellow, red, orange, pink.....	20 in.	Early Summer to Fall
Pansy.....	all colors.....	6 in.	Spring to Fall
Petunia.....	red, white, pink.....	14 in.	Spring to frost
Phlox.....	red, white, pink, yellow.....	16 in.	Summer to Fall
Poppy (annual).....	pink, red, white, yellow.....	12 to 24 in.	Spring to Midsummer
Poppy (perennial).....	pink, red, white, yellow.....	12 to 24 in.	Spring to Midsummer
Portulaca.....	pink, red, white, yellow.....	4 in.	Early Summer to Fall
Salpiglossis.....	white, yellow, brown, red.....	24 in.	Summer to Fall
Salvia.....	scarlet.....	24 in.	Late Summer to Fall
Scabiosa.....	white, pink, yellow, purple.....	30 in.	Early to late Summer
Snapdragon.....	yellow, orange, pink, red.....	1½ to 3 ft.	Summer to Fall
Stock.....	pink, white, scarlet, yellow.....	14 in.	Early to late Summer
Sweet Peas.....	all colors.....	6 ft.	Midsummer
Sweet William.....	pink, white, red.....	14 in.	Spring to Midsummer
Verbena.....	red, white, pink, blue.....	6 in.	Spring to Fall
Zinnias.....	red, white, pink, yellow.....	1 to 3 ft.	Early Summer to Fall



**Sweet Corn Propagation Field With Tassels And Ears Tied Up  
In Paper Bags To Control The Pollenization**

## **The Production of Garden Seeds**

THE source of garden seeds is a subject about which very little is known by the average planter, so we are devoting a little space here to briefly explain the mystery.

Many people believe each seed house grows all its own seed—that a Northern Seed House produces only Northern seeds and a Southern House sells only Southern grown seeds. This is all very erroneous. No seed company, selling a complete line, grows all its own seeds. The growing of garden seeds is conducted by specialists in many parts of the world—each specialist confining his efforts to one or, in any event, to a few species.

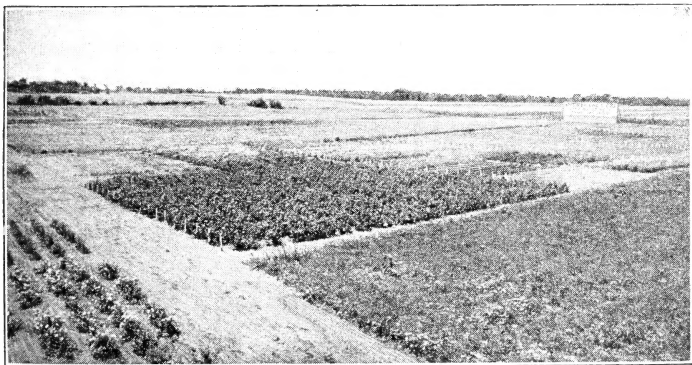
Up to the beginning of the World War, most of the Western World's garden seed was produced in Europe—France, Holland, Denmark, England and Italy being the large growers. During and after the war, seed growing increased in this country and now the major part of our requirements are produced at home. Nearly every section of this country is famous for the production of at least one variety, but the greater seed farming areas are in California, Washington, Colorado, Idaho and scattered districts in the East, South and Central West.

Northrup, King & Co. produces its own beans, peas and sweet corn, grows other items on a contract basis and obtains the other

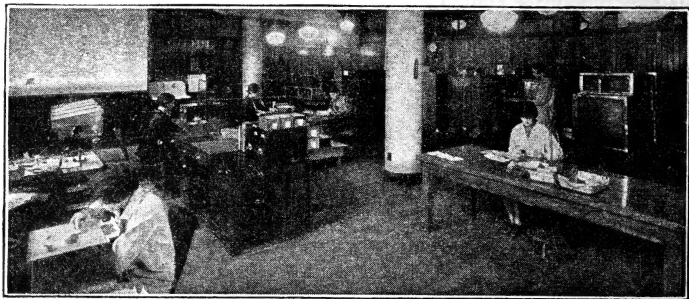


### **A Rogueing Crew In A Northrup, King & Co. Bean Field in Idaho**

seed stocks through outright purchases from acknowledged experts located in the most ideal situations for production of their specialties. The bean and pea production by this firm is carried on in Idaho, where the climate, rainfall, soil and growing period all combine to mature most satisfactory seed crops. After harvesting the crops from thousands of acres of these items, the seed is shipped to Minneapolis, where it is carefully hand-picked and laboratory tested to assure highest germination and vigor.



### **A Section of Northrup, King & Co.'s Trial Ground near Minneapolis**



**Completely Equipped Seed Testing Laboratory of  
Northrup, King & Co.**

Northrup, King & Co.'s Sweet Corn Seed is produced within a radius of 60 miles of Minneapolis. In addition to extensive growing operations, this firm has conducted large breeding and experimental tracts under the personal direction of its seed corn experts. New varieties have been propagated and great improvement made in standard sorts. Two new Golden Bantam varieties are described on page 12.

Because of the methods of growing and the personal attention given to garden seed crops, few impurities are found in the seed, but adequate equipment is provided to clean and purify any stocks which need such service. Germination and vigor, however, are items of the utmost importance and skilled testing with modern laboratory equipment is necessary to determine their satisfactory existence. The Northrup, King & Co. Laboratory is one of the largest and most completely equipped in the country, and it is under the personal direction of a nationally known seed analyst. Over 15,000 tests are conducted here each year.

Field tests are also made of all lots of seeds, at the Northrup, King & Co. Trial Ground located a short distance out of Minneapolis. Accurate tests for vitality, growth, type, size, color, etc., are made and recorded. Competitor's stocks are also tested, that comparisons may be made. New strains are also tried out here and found satisfactory before being added to the Northrup, King & Co. garden seed list.

The handling of garden seeds is a business requiring a great amount of detail and extremely accurate execution. The Northrup, King & Co. organization is trained for this accuracy. In growing harvesting, threshing, shipping, cleaning, testing, tagging, storing—all processes are conducted by experienced operatives—an organization over fifty years in building—with a leadership which is satisfied with nothing but the best service to the company's patrons.

## Storing Vegetables for Winter Use

There are many vegetables, grown from seed, which are well adapted to winter storage. Among the most popular ones are beets, carrots, parsnips, onions, celery, salsify, cabbage, cauliflower, squash and turnips. All of these retain most of their delicious fresh flavor if stored properly, and such storage is easy to provide and inexpensive.

Some vegetables, like onions, are not injured by light freezing temperatures and hence keep nicely in baskets or boxes in the attic. Before storing onions remove the tops and expose the bulbs to dry air, in the shade, for a few days.

Practically all the root crops require storage in a root cellar, a dark cool basement or in outside pits. If in the basement they should be stored between layers of slightly moist sand, either in piles or in boxes. The sand prevents shriveling. Always cut off all vegetable tops before storing. Parsnip and salsify are frequently left in the ground, where grown, all winter, which makes them milder and sweeter.

For outdoor storage in pits, choose a well drained spot and make a shallow excavation, three or four feet wide and six inches deep. Put a good layer of straw in this trench and over the sides and pile the vegetables in a conical heap. The length will depend on the amount to store. Cover the vegetables with one or two feet of straw—depending upon the amount of protection necessary. As the weather gets colder, put four or more inches of soil over the straw. In very cold sections even more covering may be needed. Some ventilation must be provided in such a pit or the vegetables will decay. This circulation may be secured by leaving a slight space at the top where the straw is exposed or by inserting a ventilation flue that will stick up through the top. A drain tile stood on end and projecting above the pile will serve, and a screen at the bottom will keep out rodents. Some kind of a cap should be provided to keep out rain and snow.

Cabbage requires different treatment for storage. While a few heads may be kept for several weeks in a cool basement, the better plan is to store this vegetable outdoors. Dig a trench six inches deep, wide enough to hold three heads, and as long as needed to hold the number of heads to be stored. Pull the plants, roots and all, and stand them heads down, three wide in the trench. No leaves should be removed. Then on top of the three rows and between their stems place two more rows, roots up. Next put on a layer of straw and cover with soil. It is not necessary to cover enough to completely prevent freezing.

Celery can be stored, in a dark cool cellar, by digging up the plants with the roots and setting them close together in soil on the cellar bottom or in boxes. The soil around the roots should be kept moist but the tops must not be wet or disease is likely to be serious. Larger quantities should be stored in a trench in well drained soil. Dig trench 12 to 15 inches wide, as deep as the plants are tall. Set plants, with roots on, close together in trench watering soil around the roots but being careful to keep tops dry. Cover with straw and manure to prevent freezing.

# Northrup, King & Co.'s Bulk Garden Seed



The best assurance of obtaining good quality seeds lies in the reputation of the seed house whose name is back of them. For half a century Northrup, King & Co. have been distributing garden seed—each succeeding year showing a large percentage of repeat orders, and a constantly increasing clientele of new buyers. There can be only one reason for this satisfaction.

Bulk garden seeds are frequently sold in packages which do not bear the name of the seed house responsible for the quality. It is wise, in such instances, to obtain this information before you buy.

## Most Complete Line of 5c Packets

The same high quality is maintained in Northrup, King & Co.'s Packet Seeds, as in their Bulk Garden Seeds. Add to this the fact that all their standard size packets of vegetable seeds, and about two-thirds of their standard size packets of flower seeds retail at 5c and you have accounted for the remarkable popularity of this line. Make your selection early from the convenient display box.

### SOLD ONLY BY DEALERS

**Northrup, King & Co.**  
Seedsmen, Minneapolis, Minn.

